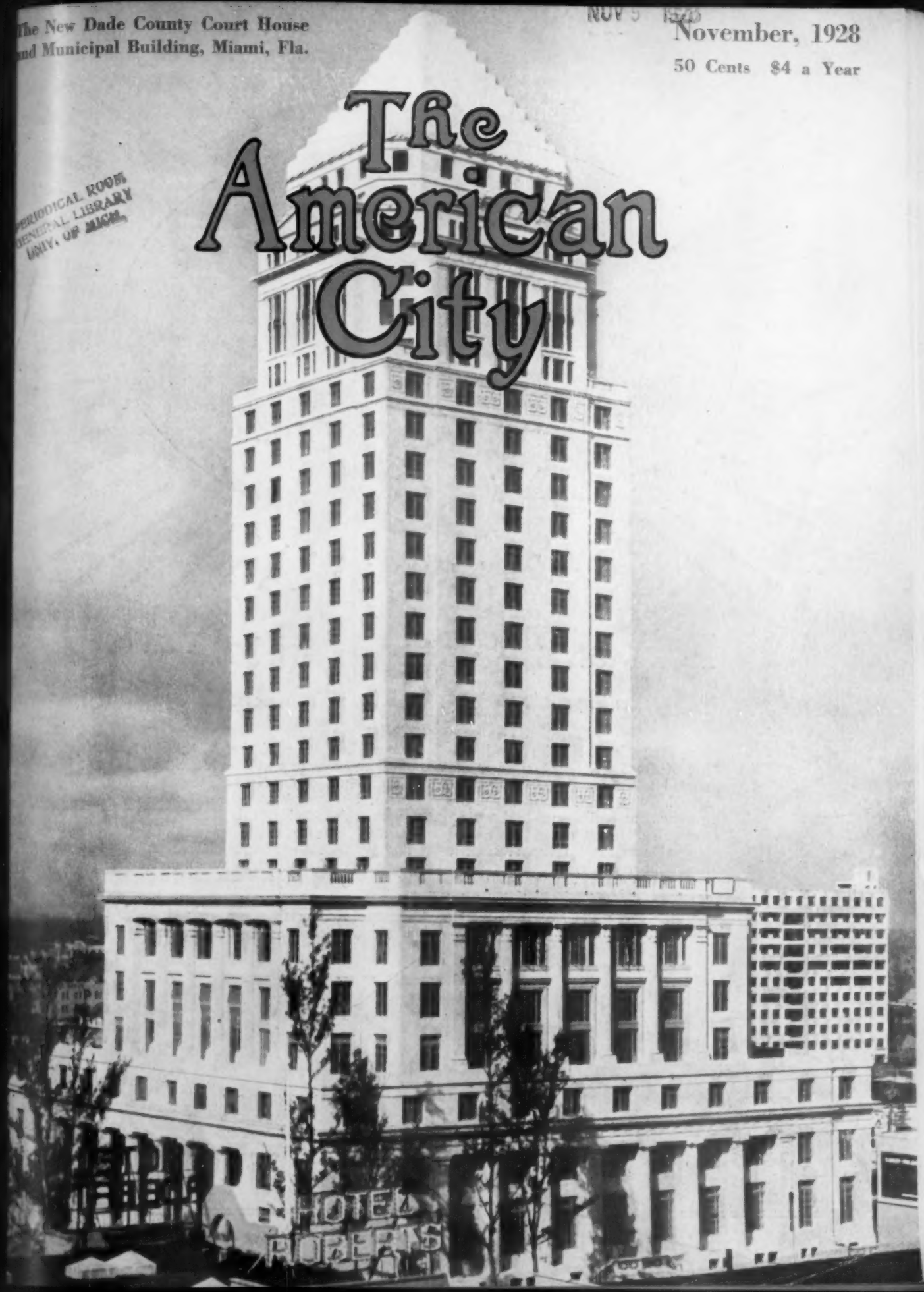
The New Dade County Court House
and Municipal Building, Miami, Fla.

NOV 5 1928

November, 1928
50 Cents $4 a Year

The American City

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.



For this State Capitol —

a Smooth, Quiet, Attractive Pavement

The State Capitol is the first building of the State. As such, it is designed to arouse the admiration of all who visit it. The structure, the grounds, and the surroundings in general, all must contribute to the favorable and lasting impression, it is sought to make.

Holding a conspicuous place in the visitor's eye is the pavement which serves the Capitol.

Above is a view of the TEXACO Asphalt pavement at the new State Capitol in Lincoln, Nebr. The pavement, by the way, is now twelve years old. Today, this TEXACO surface is as smooth, easy-riding and good-looking as ever it was. It fits admirably into the environment of this State Capitol, and aids in creating the feeling of admiration experienced by those visiting this, the leading edifice of Nebraska.

TEXACO
ASPHALT

THE TEXAS COMPANY, U. S. A.
ASPHALT SALES DEPARTMENT
17 Battery Place New York City

New York Houston Buffalo
Cleveland Kansas City Dallas
Chicago Jacksonville Richmond
Philadelphia Boston

HAROLD S. BUTTENHEIM
Editor

THEODORE R. KENDALL
Secretary and
Engineering Editor

H. M. OLMSTED
Associate Editor

M. V. FULLER
Associate Editor

The American City

443 Fourth Avenue, New York

EDGAR J. BUTTENHEIM
President and Manager

TOM DIX
Vice-President

HERBERT K. SAXE
Treasurer

PRENTICE C. FORD
Assistant Manager

MYRON MacLEOD
Eastern Advertising Manager

INDEX TO CONTENTS

Vol. XXXIX, No. 5

NOVEMBER, 1928

Airports and Aviation
Average Distance of Airport from City. 110
Aerial Highways and Their Markings.. 127
Road Machinery in Airport Work.... 189
City and Town Clerks of New England Organize 115
Buildings, Public
Buffalo Plans $2,500,000 City Hall.... 121
"Civic Office Building" Instead of "City Hall" 158
"Tower of Justice," Miami, Fla..... 159
City and Regional Planning and Zoning
Height Limitation for Whole Metropolitan Area 5
A Vision of the City That Might Be.... 19
Where City Planning Should Begin.... 91
The Cul-de-Sac Street 104
Crowding of Buildings Condemned by Illumination Expert 106
City Planning Defined Again..... 106
Cutting City Planning Budgets Checkmated by Organized Public Opinion.. 108
Underground Wiring in New Subdivisions 110
Cooperative Subdivisions in Denmark.. 136
Cooperative Regional Planning..... 158
Zoning and Planning Notes..... 171
Planning Regional Highways for New England 173
City's Place in Civilization 101
Civic Art
Good Design in Ornamental Flag Poles. 130
Two Notable American Art Commissions 131
Civic Group Helps to Beautify Park..... 19
Conventions 179
County Engineers, Who's Who Among.... 13
Film Record of Affairs, Baltimore..... 110
Finance
Municipal Budgets 5
A Comparison of Bond Election Totals. 17
The Municipal Bond Market..... 17
Wheel Tax Prevails in Illinois Cities.. 94
Preventing Unbalanced Bids..... 100
Enforcing Tax Liens..... 123
Fire Prevention and Control
Large Cities Holding Fires in Check... 21
Conservation of Property at Fires..... 153
New Fire-Alarm and Police-Signal System, Steubenville, Ohio..... 191
Forward Steps 158
Government, Municipal
Getting Effective Publicity for the Municipal Government 5
Municipal Office Hours, New York State 5
Evolution and Ideals of the Efficiency Movement in City Government..... 19
Selling Cincinnati's Government to the Taxpayer 109
Annual Vacations of Village Officials... 110
Why Public Support for Municipal Bond Issues is Sometimes Lacking..... 143
Stopping Unsavory Publicity by Putting the Municipal House in Order..... 152
Flint Favors Council-Manager Form... 158
Health
The Fight Against Typhoid Fever..... 107
Dangerous Conditions in Indoor Swimming Pools 110
Another Water-Borne Typhoid Epidemic 152
The Month in Public Health..... 161
Highways
Brazil Extends System of Highways... 11
Texas Leads in Federal Aid Roads.... 11
New Floor for Famous Highway Bridge. 11
Highway Investment in Canada..... 11
A Study of Alley Paving..... 92
Small Town Salvages Macadam Streets. 97
Building Safety into Streets..... 111
The Study of Concrete Pavement from Core Drill Records 116
Are Your Roads Ready for Winter?.... 119
Boulevard Construction in Pasadena... 140
A New Motor Patrol Grader..... 187
A Portable Flasher 187
Housing
Montana's 100 Rural Community Houses 136
Establishing Low-Cost Housing as a Basic American Industry..... 149
Legal Decisions 17, 167
Lighting
Cincinnati's Central Parkway..... 98
Combined Street Lights and Floodlighting Units 181
A High-Voltage Street Light..... 189
Mayor Invites to "Knock-Fest"..... 5
Municipal Research Activities of M. I. T.. 108
News and Illustrations..... 181
Noise Reduction in Construction..... 109
Parks and Recreation
Five Principles to Guide Selection of Recreation Areas 15
And the Cows Come Home Safely..... 15
Sound Leadership and Adequate Facilities Are Essential..... 15
Land, Like Talent, Is Improved by Use 15
The Strong Recreation System Follows the Strong Demand..... 15
Old-Time Parental Responsibilities Have Been Passed on to Municipalities... 15
Community Recreation—a Wisely Human, Wisely Industrial, Wisely Economic Thing 81
Turning Unused Land and Buildings into Public Recreation Assets..... 107
What Constitutes a Reasonable Recreation Equipment to Be Supported by Public Tax Money..... 144
Development of Dresden's "Sportplatz" and Other Public Play Areas. 155
Memorial Pool in New South Wales.... 156
Fishing in a City Park..... 160
Wire Brush Attachment for Power Mowers 183
Personnel Selection 122
Police, Courts and Crime
How Baltimore Selects Its Jurors..... 17
Who Should Pay for Accidents to Commandeered Cars or Drivers?..... 21
A Lesson in Courtesy..... 21
Police Training Schools in New Jersey and New York 107
Population Estimates, July 1, 1928..... 157
Power Plants 141
Publications 175
Safety
Safety Congress Offers Accident—Reduction Platform 19
Who's Who in Public Safety..... 23
Electric Railway Group Cuts Fatal Accidents 84
Optical Illusion Aids Motorists..... 160
Sewers and Sewage Disposal
Largest Sewage Treatment Plant Opened 7
Small Sewage Treatment Plants..... 7
Sludge Disposal 7
Sewage Treatment Works of the Activated Sludge Type, Elyria, Ohio... 95
Street Cleaning and Snow Removal
Snow Removal by Machinery in Cities. 85
The Duties and Powers of a Street Sanitation Official 120
The Rotary Plow in City Snow Removal 181
Preventing Large Snow-Drifts..... 183
Pneumatic Lifting Device for Snow-Plows 185
Snow Loaders for Snow Removal..... 185
Snow-Plows for Use with Motor Trucks 191
System in the City Manager's Office..... 86
To Make a Long Story Short..... 107
Traffic
"Raising the Whip" as a Signal..... 21
A. A. A. Seeks Better Care of Injured. 21
Central Heating Plants and Traffic Relief 100
Traffic Bureau Learns Some Simple Geometry 108
The Day of Slaughter in Baltimore.... 121
Jim, the Truckman, Kicks the "Drivin' Fools and Walkin' Yaps"..... 132
New York's New Method of Investigating Causes of Fatal Traffic Accidents 134
New York's First Printed Regulations. 135
Recommendations, Street Traffic Signs.. 145
Hand Signals for Automobile Drivers.. 163
St. Louis Municipal Parking Space.... 165
Trees and Forestry
The Two-Century Influence of a Tree.. 112
Washington Gains in Public Tree Planting 160
Water
Who's Who in Water Supply..... 9
Gunited Steel and Centrifugally Cast Concrete Pipe Line—I..... 87
Management of Water-Works Business from Executive Standpoint 113
Is the Recreational Use of Impounding Reservoirs Permissible? 137
Ground Water or Filtered Water?..... 139
Concrete Meter Boxes and Covers..... 185

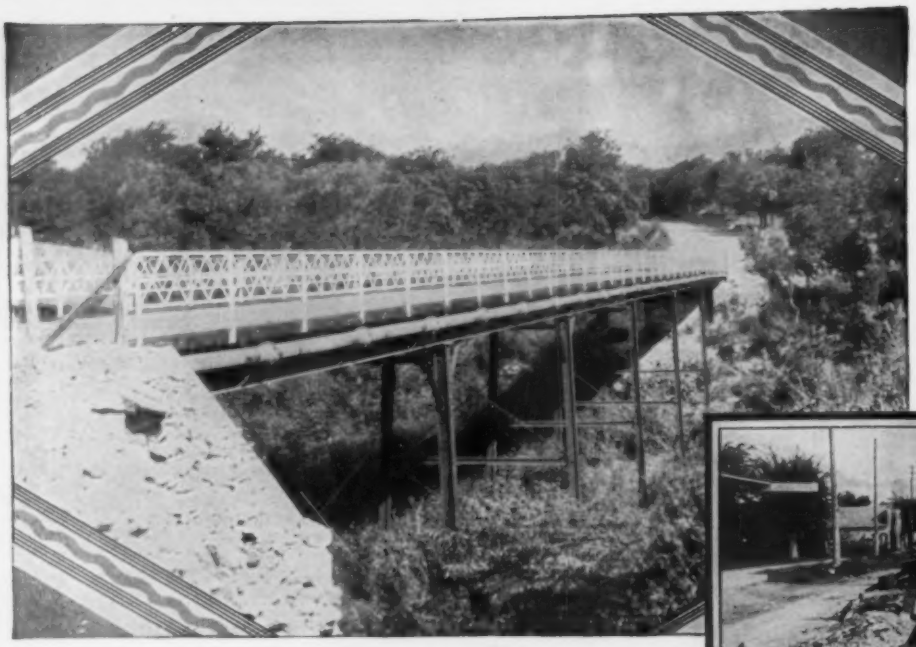
***For* INDEX *to* ADVERTISEMENTS**

See page preceding back cover

The offices of THE AMERICAN CITY are headquarters for information on equipment for municipal and county works. If you want catalogs, prices or names of manufacturers, write or wire us.

Annual subscription to any part of the world, $4.00; single copies, 50 cents; back numbers available.

Entered as second-class matter, April 16, 1923, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.
Issued monthly by American City Magazine Corporation, 443 Fourth Avenue, New York.—Tribune Tower, Chicago, Tom Dix, Vice-President. 410 Hanna Building, Cleveland, George S. Conover, Manager.—155 Montgomery Street, San Francisco, Roger A. Johnstone, Manager.



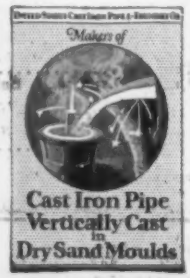
To reduce installation costs Anthony joint pipe is available in 24-ft. lengths made up of two standard lengths welded and tested under ideal conditions at our plant

Eight-inch Anthony Joint deLavaud gas pipe line suspended on bridge across Colorado River at Austin, Texas

No leaks occur in *this* bridge crossing

EACH year there is added proof of the soundness of deLavaud cast iron pipe with the Anthony joint for gas and water service. The Austin Gas Co. installed the 8 in. deLavaud main illustrated above in 1926. Where this line crosses the Colorado River Bridge, conditions are unusually severe, due to peculiar strain and constant vibration. That leakage has never developed is practical evidence of the great tensile strength of deLavaud pipe and the flexibility of the Anthony joint.

In modern high-pressure gas lines this type of installation has proved widely satisfactory. Under daily pressures of 90 to 125 lbs. leakage can be practically eliminated. DeLavaud pipe gives pressure-proof tightness, combined with ease of installation, and the age-defying economy of good cast iron.



MAY WE SEND YOU LITERATURE COVERING USES and LATEST SPECIFICATIONS OF DeLAVAUD CENTRIFUGAL PIPE

United States Cast Iron Pipe and Foundry Company

General Offices:
Burlington, New Jersey

Philadelphia: 1421 Chestnut St.
Chicago: 122 So. Michigan Blvd.
Birmingham: 1st Ave. & 20th St.
Buffalo: 957 East Ferry Street
Cleveland: 1150 East 26th Street
New York: 71 Broadway
San Francisco: 3rd & Market Sts.

Los Angeles: 403 So. Hill St.
Pittsburgh: 6th & Smithfield Sts.
Dallas: Akard & Commerce Sts.
Kansas City: 13th & Locust Sts.
Seattle: 1st & Marion Sts.
Minneapolis: 6th Street & Hennepin Avenue

Items and Abstracts for MAYORS AND CITY MANAGERS

Getting Effective Publicity for the Municipal Government

"SELLING the Work of the Government to the Public, was the subject of an address delivered by Moses Strauss, Editor of the *Cincinnati Times-Star* at the Joint Convention of the National Municipal League, Governmental Research Association, and National Association of Civic Secretaries in Cincinnati, on October 17.

"The work of the city government depends on its theory and its laws as expressed by and through its officials and employees," said Mr. Strauss. "The work of the newspaper depends on the same thing, in brief, on its editors and reporters. Those reporting the government should be men and women conversant with current city affairs, and students of city government and politics. Therefore, the city officials should try to see that they come in contact with such men. Having made this contact, they should see that they do nothing to discourage them, but should see to it that they stimulate them. The city official should see that every such newspaper man's initiative in reporting on community or city affairs is cultivated. This is a delicate problem, but in it lies the understanding of how to sell the work of city government through the newspapers."

Similarity in Municipal Office Hours in New York State

WITH few exceptions, similar office hours prevail in the municipal departments of villages in New York State, it is disclosed by a recent survey conducted by the New York State Bureau of Municipal Information.

Data collected from forty communities show that in thirteen of them municipal office hours are from 9 to 5 o'clock; in nine the daily working schedule is from 8 until 5 o'clock, and in nine others, from 9 until 4 o'clock. Variations of these schedules include such hours as 8 until 4 o'clock, 8.30 until 5 and 8.30 until 4. Among the exceptions to these general hours is Depew, where the schedule is but from 9 until 1 o'clock. In Fredonia, the tax receiver and treasurer have office hours from 9 until 3 o'clock, and the clerk from 8.30 to 5. Kenmore also has a slightly different schedule for the clerk and treasurer, while at Penn Yan the water superintendent's office and the water office remain open from 8 until 6 o'clock, with no set office hours for other municipal officials.

With but six exceptions, all municipal offices except police and fire are closed Saturday afternoons. Those not observing that procedure include Lancaster, Malone, Newark, Penn Yan, Saranac Lake and Seneca Falls, and Ilion stated that general closing is observed Saturday afternoon except when the tenth of the month falls on Saturday.

No municipal offices are open evenings, except police and fire, in 27 of the villages queried. The city clerk is available any evening at Depew, however; his office is open each evening during free collection of taxes at Fredonia; open from 7 until 9 o'clock each Wednesday evening at Hoosick Falls; open until 7 in the evening each Friday at Scotia, and from 7 until 9 every Friday night at Walden. The light department office is open evenings on the tenth of each month at Endicott and until 9 in the evening the first Saturday in each month at Herkimer. Lancaster keeps the treasurer's office open Saturday evenings, and at Hastings, the police justice is available during the evening from Monday until Friday inclusive. Scotia not only has its clerk available until 7 o'clock each Friday night, but also keeps other municipal offices open until that hour.

A Mayor Invites His Fellow Citizens to a "Knock-Fest"

MAYOR CHARLES G. HANNA of Syracuse has recently inaugurated a campaign to elicit criticism of the city administration and its activities. Contrary to the usual custom of side-stepping criticism, Mayor Hanna is making a special effort to find out just what civic organizations and civic leaders think of his official family and their conduct of the city government. The following letter has been sent out to all civic organizations, associations and civic leaders interested in the welfare of Syracuse.

Dear Syracusan:

Every day I drive around Syracuse trying to see the things that need to be done to make this a better city.

I know that with our five hundred miles of streets some things must escape me.

Long before I was even interested in politics I was a member of most of the civic clubs of this city. Their make-up composes every nook and corner of this town of ours. So here's where you're asked for something.

We dodge compliments and love to analyse criticisms.

I have the idea that you could appoint a representative committee of three or five members to tour Syracuse in their spare time for the week of .....

What we want is a good "knock-fest," giving us without gravy or modifications what should be done to keep Syracuse one of the top cities.

Will you or your directors appoint such a committee and ask them to make such an inspection or report to be turned over to me at their convenience?

Yours for a better Syracuse,
CHARLES G. HANNA.

As replies to this letter are received, they are having careful consideration by a special committee. Sane suggestions and criticisms of a constructive nature will be adopted, in an earnest desire to make Syracuse a better place in which to live, work and play. The idea has received much favorable commendation throughout the city, and many helpful suggestions are being offered by newspapers and citizens.

Municipal Budgets

GLADSTONE, the English master of budgetary technique, once said: "Budgets are not merely affairs of arithmetic, but in a thousand ways go to the root of prosperity of individuals and related classes, and the strength of kingdoms." This statement epitomizes the significance of the budget and the importance of budget-making in government. The budget, we may infer, is fundamental in any scheme of democratic government. It is a means of developing responsible leadership, which is necessary to popular control. Leadership, especially executive leadership, is demanded in budget-making. And why? Because budget-making requires skill in planning administrative work, a mastery of financial details, a comprehensive understanding of governmental functions and their needs, and a thorough grasp of taxation and its relation to the social and economic processes.

A generation ago, no attempt had been made to apply budget methods and procedure to American city governments. In those days city authorities were spending thousands, even millions, of dollars annually with little or no thought as to where the money was coming from or what they were getting for it. . . . But things have changed. Today practically every progressive city government in the country has established a budget procedure of some kind. In many cases, however, this procedure is not very effective, owing to the form of administrative organization or to the relation that exists between the city executive and the legislative body. The present trend in the development of municipal organization points toward the gradual elimination of most of the difficulties that now stand in the way of a comprehensive and workable budget procedure in many cities.

—A. E. BUCK, from Chapter on The Budget and Budget Making, in "Municipal Finance," The Macmillan Co., New York.

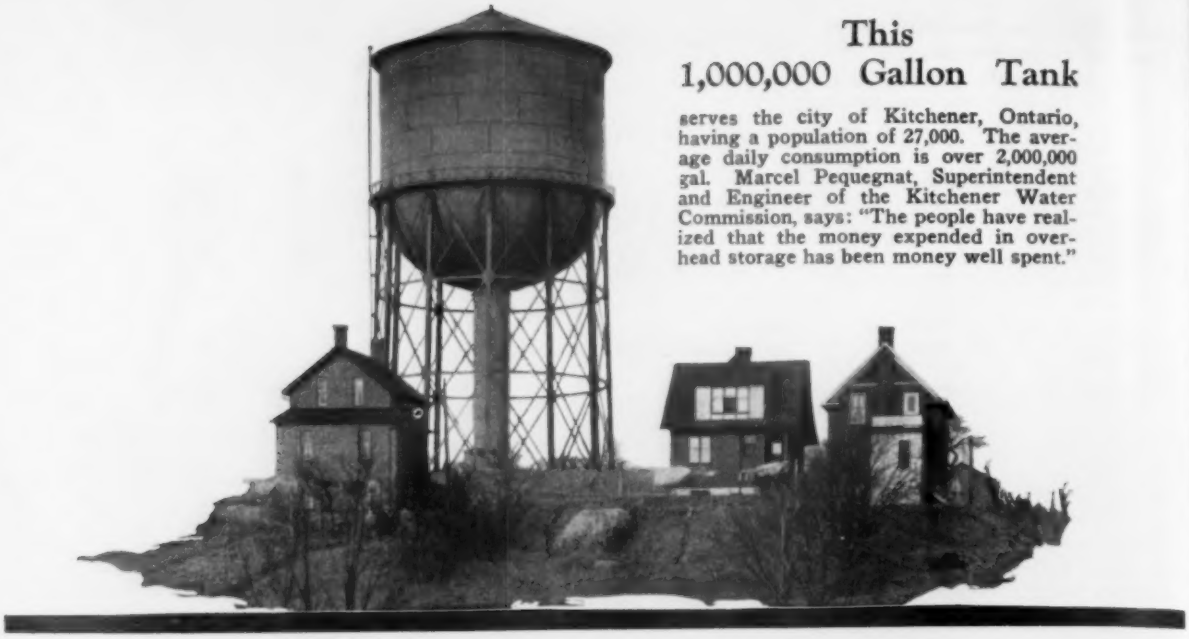
Would Make Height Limitation Apply to Whole Metropolitan Area

BELIEVING that a uniform height for buildings should be maintained throughout the metropolitan area of a city as well as within the city's territorial limits, the Los Angeles Realty Board, through its Board of Directors, will ask the County Supervisors of Los Angeles County to adopt a height-limit ordinance for the county, a report to the National Association of Real Estate Boards states.

The uniformity of building heights has produced a distinctive type of downtown development and has relieved to some extent the congestion attendant where height is unlimited. If buildings are permitted to rise to any height outside of the city limits, however, the present healthy sentiment of Los Angeles City against high building might be broken down, it is pointed out.

A Wide Variety of Topics

of interest to mayors and city managers, in this issue include airway marking, street traffic signs, community recreation, and the city's place in civilization (pages 127, 145, 81, and 101).



This 1,000,000 Gallon Tank

serves the city of Kitchener, Ontario, having a population of 27,000. The average daily consumption is over 2,000,000 gal. Marcel Pequegnat, Superintendent and Engineer of the Kitchener Water Commission, says: "The people have realized that the money expended in overhead storage has been money well spent."

"People have realized... ...money well spent."

SOME improvements that municipal executives know would produce adequate returns on the investment cannot be made because of the difficulty of convincing the public of their desirability.

But ample elevated water storage in Horton Tanks produces the kind of results which every citizen can appreciate. Higher and more uniform pressures for domestic service—ample water for fire protection—these are very tangible improvements in any city that has had a water supply problem.

An increasing number of cities are adopting big tanks every year. The economy of ample storage in Horton Tanks—has been demonstrated repeatedly in cities of all sizes.

Our nearest office will gladly furnish you data covering the experience of other cities, and cost estimates on your own tank requirements.

CHICAGO BRIDGE AND IRON WORKS

Chicago.....2127 Old Colony Bldg.
New York....3108 Hudson Ter. Bldg.
Cleveland....2236 Union Trust Bldg.
Dallas.....3306 Magnolia Bldg.
Atlanta.....1014 Healey Bldg.
San Francisco.....1033 Rialto Bldg.
Havana, Cuba.....Apartado 2507

HORTON TANKS

AO 11-Gray

Five Valuable Water-Works Articles in December Issue

THE water-works articles to be published in the December issue of THE AMERICAN CITY cover the interesting new water-works of St. Louis, 13 miles above the city limits. This new plant gives the city two independent sources of supply, either of which will furnish enough water to tide over an emergency. The ultimate capacity of the new plant will be 200 m.g.d., but it will deliver only 55 m.g.d. for several years. The second part of the Laguna Beach article will also appear.

The Mount Airy water-works, which have received so much favorable comment, are described in an especially prepared article by Preson P. Phillips, designing engineer, Gilbert O. White Co., Durham, N. C. The Mount Airy supply dates from 1903 and was enlarged successively in 1910, 1913, 1925, and 1926. The present article describes the new plant, the construction of which began January 1, 1927.

The new filtration plant supplying Greenwich, Conn., and recently built by the Greenwich Water Co., with Metcalf & Eddy as consulting engineers, is described in an article by E. Sherman Chase. This plant consists of a low-lift pumping-station, aerators, chemical mixing tanks, coagulation basin, rapid sand filters, a clear-water basin and chlorination equipment.

The fourth article is an interesting discussion of the ownership of water meters, based on an extensive survey made by the Bureau of Municipal Research of Philadelphia.

World's Largest Sewage Treatment Plant Opened

THE largest sewage treatment plant of its type in the world was officially opened the first week of October for the Sanitary District of Chicago. The North Side plant, as it is called, covers 97 acres and was built to treat the sewage of an ultimate population of 1,340,000. It serves an area of 78 square miles, which includes eight suburbs as well as a large section of the city of Chicago. Formerly, the Sanitary District treated all its sewage by diluting it with water from Lake Michigan and sending it through a canal 30 miles long to the Illinois River. This method was opposed by Great Lakes cities which claimed that it was lowering lake levels, and by cities along the Illinois River because of pollution of the river water. The controversy came to the attention of the Secretary of War, who permitted Chicago to continue this procedure on condition that it would begin the installation of sewage treatment plants. The newly opened plant, supplemented by three already in operation, one being constructed and one being planned, will eliminate the necessity of drawing heavily on Lake Michigan for water and will bring to an end the heavy pollution of the Illinois River.

The North Side plant utilized the activated sludge process, in which the sewage is sent through screens and settling tanks where most of the solids are removed. It is then turned into large basins where air is blown through it. This air aids the biological action in the sewage which destroys impurities. After the aeration has been completed, the remaining fine solids in the sewage are allowed to settle out in sedimentation tanks, and the liquid, which is then harmless, is turned into an adjoining channel.

Items and Abstracts on WATER AND SEWERAGE

The Ever-Present Problem of Sludge Disposal

IT appears to be possible to accelerate the digestion of sewage sludge by regulation of temperature and reaction. The collection of gas from decomposing sewage sludge is not new, but the use of this gas for the purpose of maintaining the temperature of sludge at 80° Fahrenheit in separate digestion tanks is a promising development. Extensive research in recent years has led to better knowledge of the processes of biological decomposition of sewage sludge. A few full-scale plants have been installed for the collection of gas and heating the sludge. The data of operation of these plants indicate that the biological principles established by laboratory experiments apply to sludge digestion on a large scale. Well-digested sludge can be obtained in less than two months' storage in heated tanks, whereas the same action may require from three to six months in unheated tanks in winter. It therefore appears to be possible to reduce materially the volume of digestion tanks, with consequent economy in construction costs.

The question then arises: What is to be done with the digested sludge at the end of the two months' period of storage? Our American winters will not permit outdoor drying from November to March, a stretch of five months. The economy gained by building smaller tanks and heating the sludge is therefore largely fictitious unless the sludge can be removed and dried in winter.

Some engineers propose to solve the problem by designing glass-covered, heated sludge beds. Others are considering the use of auxiliary storage tanks or lagoons, which can be built more cheaply than digestion tanks. The digested sludge is to be stored in these tanks throughout the winter and dried on open sand beds in summer. A third possibility is the use of vacuum filters or filter presses, which can be operated throughout the winter.

The cost of glass-covered beds is several times as much as that of open beds, but they make possible many more applications of sludge per year. The use of auxiliary lagoons may accomplish some reduction in cost of plant, but at the expense of operating difficulties. Mechanical sludge filtration is clearly too expensive with present equipment and rates of filtration.

An Economical Small Sewage Treatment Plant

TWO practical methods for the disposal of small volumes of sewage are reported by C. G. Gillespie, Chief, Bureau of Sanitary Engineering, California State Department of Public Health. In both cases crude but ingenious schemes were adopted at very slight cost, obviating large expenditures for standard types of treatment plants and at the same time solving the sewage disposal problem without nuisance or complaint.

The Carmel Sanitary District of California was faced with the problem of disposing of its septic tank effluent several years ago. This tank was built in the coarse sand-dune of one of its beaches, on a bay. The effluent ditch, which formerly discharged directly into the bay, was permitted to run over the beach to the sea, creating odors and a nuisance throughout its entire course.

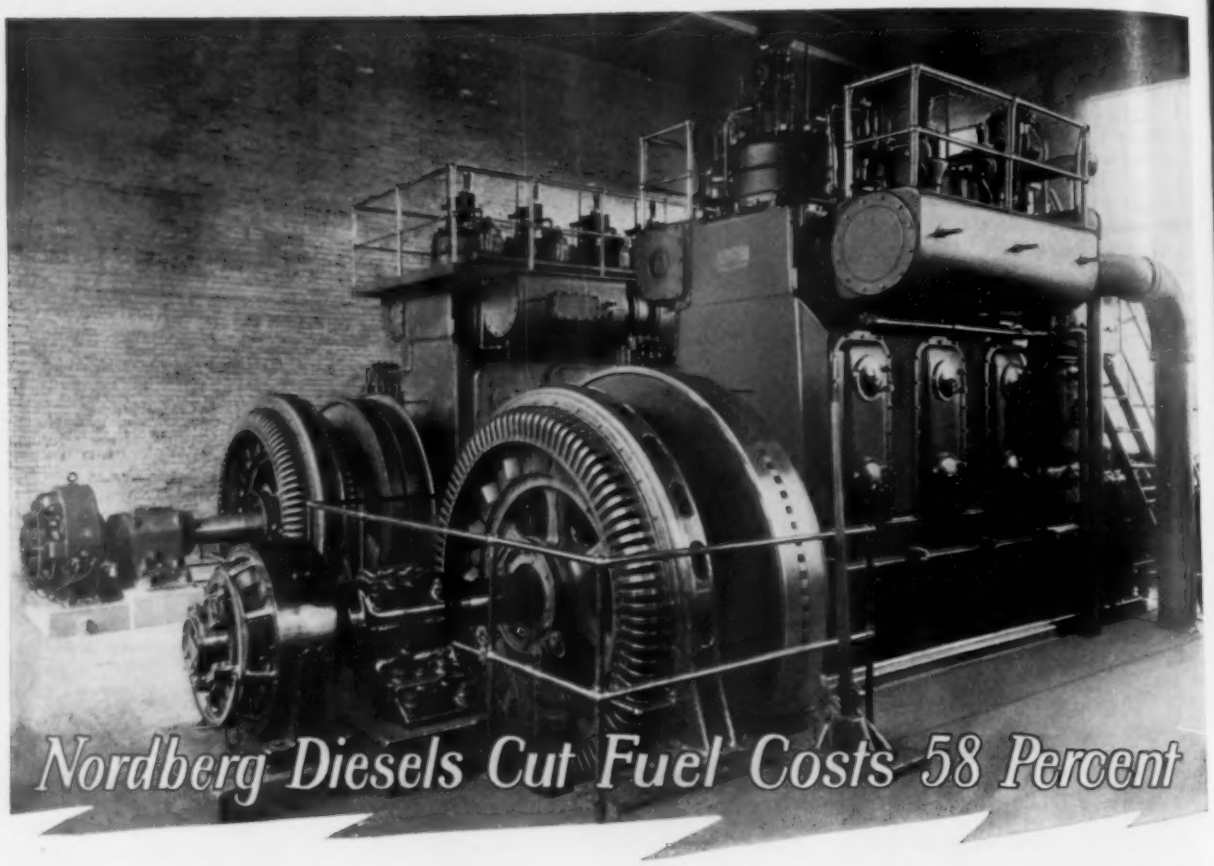
A proposal for dispersal through a tunnel to the deeper water was very costly, running over a million dollars. An activated sludge plant for inland disposal was also excessively expensive. The population of the District was approximately 4,000, with a flow of sewage varying from 50,000 gallons per day in winter to 80,000 g.p.d. in summer.

The President of the District, Dr. William Tower, modified an idea of Mr. Gillespie's in such a way that the problem was solved successfully and at a very low expense. The original idea was to parallel the shore with a long, narrow, open cesspool in the sand-dunes. Check weirs were suggested for retardation of flow, but Dr. Tower laid out the pool in such a way that it formed a series of terraces, 15 feet wide and 20 feet long, sloping 4 inches in their length of 20 feet, to 2- by 4-inch nosings. There were two units of these terraces made up of five steps of 15 by 20 feet each, or a total of 3,000 square feet.

When the beds were put into use, it developed that the slope of the surface was just sufficient to cause some movement of the sand grains. The sand was very coarse, resembling a fine graded concrete sand, with approximately 0.3 mm. effective size and 2.5 to 3.0 uniformity coefficient. The rolling movement of the grains cut away or loosened most of the slimy covering, which would usually seal a sand bed in a short time if dosed at this high rate. The sloping surface aided the flow of sewage and the scouring action of the sand.

One set of terraces takes the sewage flow for a week easily, there is no ponding, and the sewage sinks away in a few seconds after it is shut off. The sand can be immediately raked over or resurfaced. The water plane is 10 or 12 feet below the surface.

Another novel feature of this plant is a separate sludge digestion tank for partially digested sludge from the septic tank.



Nordberg Diesels Cut Fuel Costs 58 Percent

The City of Cedarburg, Wisconsin, has just placed in service its second Nordberg Diesel engine. This plant, with a capacity of 1200 horsepower, ranks among the largest city-owned Diesel-engined plants in the State.

Beginning with a small steam plant in 1901, larger and more improved units were later added. With the rapidly increasing load in 1926, it was realized that still more efficient power units were required and a three-cylinder Nordberg Diesel was installed. A comparison of power costs on the basis of fuel for the steam plant, and fuel and lubrication for the Diesel engines, shows a saving of 58 per cent. Because of the excellent performance of this engine, another but larger Nordberg Diesel was purchased in 1928.

Nordberg Diesels are consistently showing such savings in municipal plants; furthermore, their reliability assures the kind of service in keeping with modern power-plant operation.

Municipal power plants can be made to return a substantial profit to the community, if Nordberg Diesels are installed. Nordberg Engineers will gladly give assistance and counsel to municipal officials who are seeking to make their power plants more profitable, or are unsatisfied with their power arrangements. May we send you Bulletin NY-3?

Nordberg Mfg. Co. Milwaukee, Wis.

Builders of Steam and Diesel Engines for Municipal Service

NORDBERG

JAMES W. GRAHAM
Gen. Mgr., Portland Water District, Portland, Maine
(Appointed 1914)

SIDNEY S. ANTHONY
Supt., Augusta Water District, Augusta, Maine
(Appointed 1926)

PERCY R. SANDERS
Supt., Concord Water-Works, Concord, N. H.
(Appointed 1907)

PAUL F. BABBIDGE
Supt., Water-Works, Sewer and Drainage Dept., Keene, N. H.
(Appointed 1888)

EDGAR S. BEARDSLEY
Supt. of Water-Works, Rutland, Vt.
(Appointed 1926)

WHO'S WHO IN WATER SUPPLY

Installment No. 11—Portraits of Water-Works Officials in Fourteen Cities of New England

GEORGE A. REED
Commr. of Public Works, Montpelier, Vt.
(Appointed 1925)

GEORGE W. BATCHELDER
Water Commr. and Registrar, Worcester, Mass.
(Elected 1904)

HERBERT A. FULLER
Commr. of Public Works, Pawtucket, R. I.
(Appointed 1927)

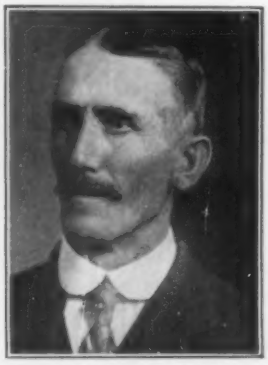
ALBERT C. DICKERMAN
Supt., East Providence Water Co., East Providence, R. I.
(Appointed 1922)

Photograph by Bachrach
CALEB MILLS SAVILLE
Chief Engr., Board of Water Commissioners, Hartford, Conn.
(Appointed 1912)

G. EARL LOURIE
Supt., Water Dept., Bristol, Conn.
(Appointed 1920)

FRANK A. DAVIS
Supt., Ansonia Water Co., Ansonia, Conn.
(Appointed 1913)

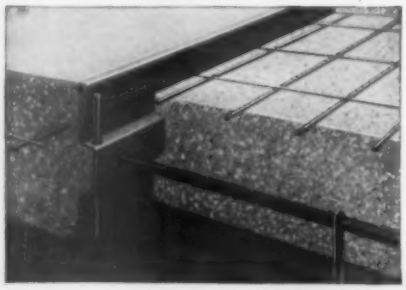
GEORGE B. RAYMOND
Supt., Water-Works Dept., Danbury, Conn.
(Appointed 1918)



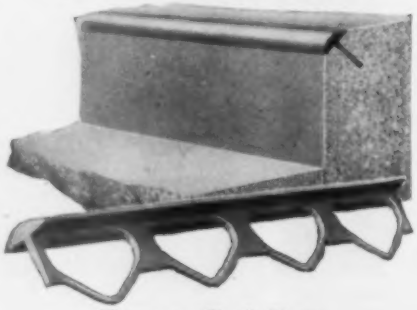
JOHN H. WALSH
Supt. of Water-Works, East Hartford, Conn.
(Appointde 1901)

Approved Materials *for* Roads and Pavements

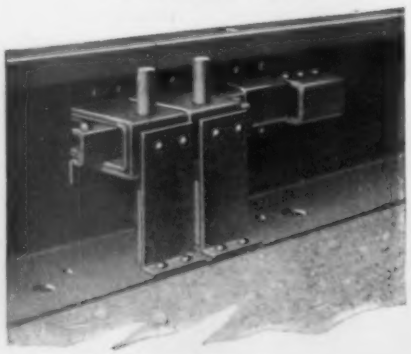
Truscon Welded Steel Fabric



Truscon Contraction Joints



Truscon Curb Bars



Truscon Road Forms

TRUSCON has identified itself from the beginning with advanced methods of road construction and has brought to the practice of modern road building both ideas and products which are now accepted as standard wherever permanent highways and streets are built.

Truscon Welded Steel Fabric, a steel mesh concrete reinforcement for roads. More economical and more effective than additional thickness of concrete. In rolls or road-size sheets.

Truscon Curb Bars are curb edge protectors and curb reinforcement of the most approved type. They insure against breakage and improve curb appearance.

Truscon Construction Joints are dowel-shape members that serve to part concrete slabs and allow expansion and contraction without destructive effect to the road slabs.

Truscon Road Forms represent the highest development in such equipment. Simple, durable, perfect in alignment, and with a special joint that positively prevents joint-sag.

TRUSCON STEEL COMPANY, YOUNGSTOWN, O.

REINFORCING STEEL DIVISION

Warehouses and Offices in All Principal Cities

TRUSCON PRODUCTS FOR REINFORCING ROADS AND PAVEMENTS

Asphalt Paving Conference to Be Held Week of December 3

CONFLICTING meetings have necessitated advancing the date of the Seventh Annual Asphalt Paving Conference to be held this year at the Roosevelt Hotel, New Orleans, and, accordingly, the meeting will be held during the week of December 3 instead of that of December 10 as previously announced. The technical sessions will continue for three days beginning on Tuesday, December 4, and continuing through Thursday, December 6. For the first time in the history of the conferences, asphalt paving at airports will come in for thorough discussion. Among those who are expected to participate in the airport session are William P. MacCracken, Assistant Secretary of Commerce in charge of Aeronautics. The program will also present new and far-reaching economic and technical questions of vital importance to the good-roads movement. The vast possibilities of surface treatment of the many hundred thousands of miles of roads that constitute the secondary highways of the country will be dealt with from the economical, technical and practical construction standpoint by a selected group of authorities headed by E. W. James, Chief of the Division of Design, United States Bureau of Public Roads.

Another feature of importance from the standpoint of practical first hand information will be a series of papers by the heads of various state highway departments, telling what results they have obtained with all forms of asphaltic construction and surface treatment. Seven of the states that have had wide and useful experience along these lines are Massachusetts, Michigan, Louisiana, Tennessee, North Carolina, Georgia and California, and also the province of Ontario.

Brazil Extends System of Highways

ACCORDING to recent reports of the Pan-American Union, progress in highway construction in Brazil is rapid. A short time ago a 300-mile motor road was completed connecting the cities of Rio de Janeiro and Sao Paulo. Within a few weeks a modern highway has been completed southward from Sao Paulo almost to the border of the adjoining state of Parana, a distance of about 230 miles.

From the border of the state of Parana to the capital city, Curityba, the distance via the proposed highway route is approximately 60 miles. Recently a sum of $240,000 was made available by the state government for constructing this link. Work is now progressing, it is announced, and when finished there will be a continuous motor highway from the Brazilian capital through the state of Sao Paulo to the capital of the state of Parana. Added to this route there are highways extending from Rio de Janeiro via Petropolis farther northward.

The journey between the cities of Sao Paulo and Curityba by railroad requires about 36 hours. When the 60 miles of highway mentioned are finished, the motor-car route will be much shorter than the railroad.

Items and Abstracts for ENGINEERING AND HIGHWAY DEPARTMENTS

Texas Leads in Federal Aid Roads

FEDERAL Aid road construction has built in Texas a mileage almost twice as great as in any other state for the period of the Federal Highway Act effective in 1926 until August 1, 1928. The Texas mileage is 5,997 miles, the two next highest states as reported by the Bureau of Public Roads being Minnesota with 3,823.8 miles and North Dakota with 3,197.1 miles. The total mileage in the United States completed as of July 31 with Federal Aid was 71,584.9 miles.

North Dakota has the most mileage under construction, 790.7 miles at a total estimated cost of $3,504,500.48, for which $1,644,804.15 of Federal Aid was allotted.

Illinois has a Federal allotment of $9,280,164.08, greater for roads under construction as of July 31 than any other state. The amount is for a total mileage under construction of 622.9 miles at an estimated cost of $20,188,584.26.

Following Illinois, are New York, with a Federal Aid grant of $7,489,393.95 for a total mileage of 483.6 miles under construction at an estimated cost of $41,915,000, and Michigan, with an allotment of $5,673,143.80 for a total mileage of 338.6 miles under construction at an estimated total cost of $3,380,003.46.

New Floor for Famous Highway Bridge

THE Potomac River Highway Bridge, connecting the District of Columbia and Virginia, has become well-known for the roughness of its flooring. This is being done away with, however, as workmen are now busy cutting out the ¼-inch steel plates which formerly served as a foundation for the asphalt top. In the place of the steel plates a wood floor 7 inches thick made up of 3 x 7-inch stringers laid on edge is being installed. This will be covered with a 2-inch surface lever of asphalt.

Early this spring the Engineering Department of the District of Columbia made a study of the bridge, following numerous complaints regarding the condition of the surface, and decided to replace the steel with wood as a means of absorbing vibration. The steel plates had buckled under their load, causing an uneven surface which, when traversed by heavy vehicles, set up dangerous vibrations.

The contract for the bridge repairing was awarded to the Farris Engineering Co., of Pittsburgh, which uses 637,000 board feet of creosoted lumber. One side of the 40-foot road across the 890-yard structure was completed first. When traffic passed over the completed section, a material difference in vibration between the two parts of the bridge was noted.

The 3 x 7's, which had been treated by 10 pounds of creosote per cubic foot, were laid on edge and bolted to an additional layer of planks running crosswise below. A total of 32,780 bolts were used in assembling the floor, and 760,000 pounds of steel I-beams added to the bridge as supports for the timbers.

Highway Investment in Canada

IT is estimated that the investment in highways in Canada now amounts to $800,000,000. The investment in equipment to run on these highways, that is, vehicular equipment of all kinds, is at least $1,250,000, thus placing the total highway investment among 9,000,000 people at something like $2,050,000. The Canadian Good Roads Association reports that the total investment of steam railways in Canada, both roadbed and equipment, comes to approximately $2,500,000. The total for electric lines is about $380,000,000 and for canals $470,000,000. So that the total investment of Canadian people in transportation comes to more than $5,000,000. The investment in Canada in transportation amounts to nearly double the national debt.

The 1929 Road Show

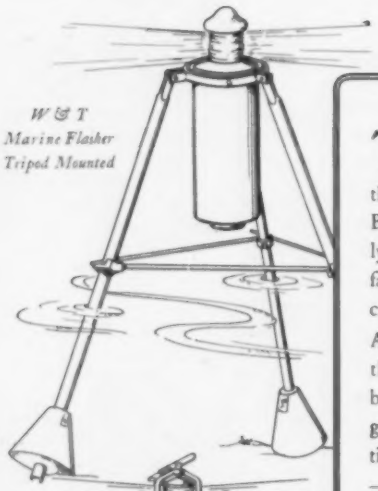
THE Convention and Road Show of the American Road Builders' Association will be held in Cleveland, Ohio, January 14-18, inclusive, 1929. The convention program will consist of the reports of several committees made up of authorities in their respective lines, as well as especially prepared papers on the different phases of street construction and maintenance.

The Road Show will include a larger number of exhibits than previously, because of the increased interest that is being taken by everyone engaged in the highway industry, and especially on account of the presence of a large number of manufacturers who specialize in equipment for the construction, maintenance and operation of city streets and who have not previously shown their products at the Road Show.

There will be special meetings of the County Highway Officials Division, including a special discussion on grade crossings. The City Officials Division will present a report on administration, construction, maintenance and traffic on city streets. Another committee will report on depreciation of road-building equipment. A committee on lien laws will report on the variety of laws controlling the practice of liens, based on a very complete study of this subject.

Tuesday, January 15, will be known as City Officials Day; Wednesday, January 16, as Pan-American Day. The Road Builders Banquet will be held on Pan-American Day, and all delegates from outside the United States will be guests of the Association. Thursday, January 17, will be County Highway Officials Day.

FLASH! FLASH! FLASH!



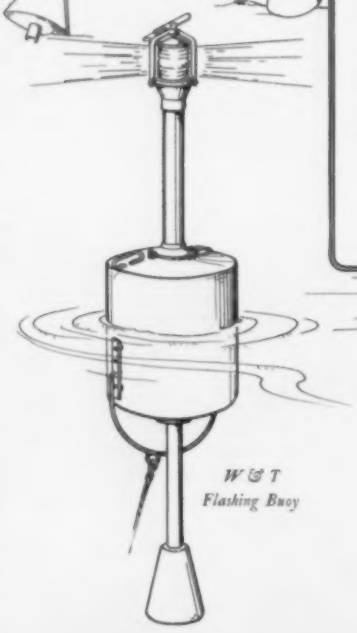
W & T Marine Flasher Triped Mounted

W & T Standard Flashing Signal. All types of signs available

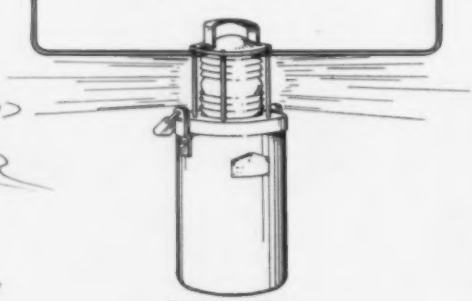
THROUGH the dark dangers of night—piercing through rain or sleet—through snow or fog—the W & T Dry Battery Flashing Signals send their friendly warning! On land or sea they are unfailing—for they make use of a new principle in warning signals—the W & T AUTOMATIC LAMP CHANGER that automatically replaces burned out bulbs. STURDY EVEREADY Dry Batteries give six months operation without attention—making these the most dependable—but least expensive—of all flashing signals. Various types and signs are available for every traffic need—and each is equipped with "Rayflector Letters" for even greater effectiveness.

Write for interesting bulletins.

W & T Universal All-Way Flasher



W & T Flashing Buoy



"EVEREADY" *Portable Flasher Mfg. by W & T*

WALLACE & TIERNAN

COMPANY, INCORPORATED

Manufacturers of Chlorine Control Apparatus

NEWARK · NEW JERSEY

NEW YORK CHICAGO KNOXVILLE SAN FRANCISCO MINNEAPOLIS PITTSBURGH DALLAS KANSAS CITY
LOS ANGELES SEATTLE ST. LOUIS BUFFALO HARRISBURGH INDIANAPOLIS DETROIT
WALLACE & TIERNAN, LTD., TORONTO, CANADA WALLACE & TIERNAN, LTD., LONDON, ENGLAND

F7

ALSO SEE OUR ADVERTISEMENT ON BACK COVER

WILLIAM T. PERKINS
County Surveyor, Massac County, Metropolis
(Appointed 1896)

JOHN H. NOWLAN
County Engr., Bond County, Greenville
(Appointed 1908)

JOHN A. DECKER
County Supt. of Highways, Cumberland County, Toledo
(Appointed 1913)

Underwood & Underwood Studios
GEORGE A. QUINLAN
Supt. of Highways, Cook County, Chicago
(Appointed 1914)

GEORGE H. BROWN
Supt. of Highways, White County, Carmi
(Appointed 1913)

WHO'S WHO AMONG COUNTY ENGINEERS

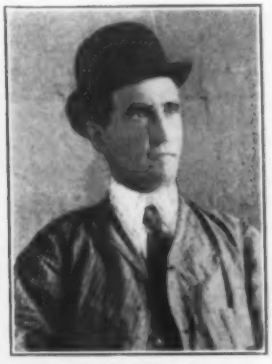
Installment No. 3—Portraits of County Engineers of Fourteen Counties of Illinois

J. A. EGELHOFF
County Surveyor, Jersey County, Jerseyville
(Appointed 1924)

ANDREW C. JOHNSON
County Engr., Grundy County, Morris
(Appointed 1924)

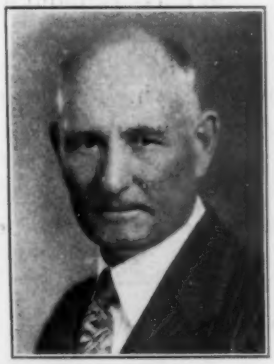
GODFREY SPERLING
County Surveyor, Champaign County, Urbana
(Appointed 1924)

BOYD H. DAPPERT
County Supt. of Highways, Christian County, Taylorville
(Appointed 1924)



W. H. SIDERS
County Surveyor, Effingham County, Altamont
(Appointed 1924)

FRED O. LARSON
County Supt. of Highways, DeKalb County, Sycamore
(Appointed 1926)



L. C. LOOKER
County Engr., Kankakee County, Kankakee
(Appointed 1925)

E. F. MOTSINGER
County Supt. of Highways, Fulton County, Canton
(Appointed 1913)

L. F. WALKER
County Engr., Crawford County, Robinson
(Appointed 1925)

The lowest priced playground outfit on the market today—per child accommodated

Forty — and more — children can use the EverWear Whirling Climb No. M-555 at the same time and its first cost is surprisingly low, only $160.00 F. O. B. Factory (slightly higher in price west of the Rocky Mountains).

It rotates, merry-go-round style and the children climb all over it.

Safe hand holds are found at every point and the higher the child climbs, the closer he is to the center of the outfit (an important fact).

It is safe, durable, good-looking all the way through, and supplies a mighty fine lot of good mass fun and exercise.

Buy one, you'll buy more!

10 feet in diameter and 7½ feet high. All weight is suspended from the top head, which contains a 5 ton capacity Timken radial thrust roller bearing.

Buy one, you'll buy more!

Catalog No. 20 tells about the 161 different types and sizes of approved playground apparatus found in the EverWear line. The leader for 21 years.

THE EVERWEAR MANUFACTURING CO. **Springfield, Ohio**

Five Principles to Guide Selection of Recreation Areas

EMPHASIS should be put upon the right principles in the selection of land for parks, parkways, playgrounds and athletic fields. Five principles may be stated as being especially important:

1. To acquire those easily accessible small tracts in different parts of a city which may most cheaply be adapted to serve as local playgrounds or recreation centers.

2. To seek also some moderately large tracts, even though less accessible for the present generation, provided they are capable of conversion at relatively small cost into parks which will have the beauty of natural scenery.

3. To acquire property for large parks in advance of general settlement of the neighborhood.

4. To select generally, though not always, lands which are not well adapted for streets and buildings.

5. To distribute the lands over the city in such a way as to give the maximum of use to the people who will be called upon to pay for their acquisition, development, and maintenance.

Notwithstanding the tremendous advance which has been made in recent years, it may still be said that *recreation, in proportion to its importance, is the most backward and neglected phase of American life.* Compare it for a moment with the attention that is given to work or education. Adequate provision for play and recreation is dependent in the last analysis upon city planning and regional planning, and especially in the laying-out of new suburbs and new towns to meet the requirements of modern life.

JOHN NOLEN,
City Planner.

—And the Cows Come Home Safely

BY charging fees of 25 cents to 75 cents a round, or $10 for a season ticket, municipalities are able to pay all maintenance costs, and to retire bonds issued to finance public golf courses. In a number of cities worthless land is being reclaimed for this sport. In one town a swamp where the neighboring farmers' cows often wandered and disappeared, was so utilized. The city fathers there expect to recoup their treasury by charges of 75 cents a round of 18 holes on week-days and $1.50 on holidays.

F. S. TITWORTH,
New York City.

Disinterested Devotion to the Work Essential

THE salaries of recreation leaders in general compare unfavorably with those of school teachers. Recreation departments are usually not so well established as the public schools. On the other hand, and for this very reason, the recreation job requires even greater personality, initiative, creative and executive ability, vision and consecration. The teaching profession usually allows three full months for travel, study, or to supplement earnings, while the full-time recreation worker has from two to four weeks' vacation.

CORINNE FONDE,
Superintendent of Recreation, Houston, Texas.

Items and Abstracts for PARK AND PLAYGROUND DEPARTMENTS

The Child's Inherent Right

RECREATION is a part of the proper function of government and should be supported by taxes. Every child should be provided with that inheritance, fostered by government, of a suitable place to play and develop into a higher citizenship.

JUDGE WILBUR J. BISSMAN,
Mansfield, Ohio.

Significant Paragraphs

from addresses and reports presented at the Fifteenth Recreation Congress, held in Atlantic City last month, comprise this month's page of Items and Abstracts for Park and Playground Departments. Additional material from this important gathering of the Playground and Recreation Association of America appears on pages 81 and 144. The convention will be more fully reported in future issues of the Association's magazine, "The Playground."

Land, Like Talent, Is Improved By Use

ALL available vacant property, whether public or private, should be pressed into service for recreation. Much public land is allowed to remain idle after purchase, waiting for money to develop it. Money for the improvement will come faster if the property is rough graded and put into immediate use, than if it stands idle, grows into weeds and becomes obnoxious to the community.

C. E. BREWER,
Commissioner of Recreation, Detroit, Mich.

Sound Leadership and Adequate Facilities Are Essential

I HAVE learned from the experience of designing a considerable number of recreation buildings for various organizations that the success of such buildings depends particularly on two factors. *One* is a leader of sufficient experience and enthusiasm to carry on a recreational program. The man in charge of physical activities must be a leader and able to do better than his pupils the thing he is teaching them. *The other* is the adequacy of the building. Young people are not interested in a half-baked program, nor are they interested in subnormal equipment. A bowling alley that is too short, or a gymnasium that is too small, or a swimming pool that cannot compete with others, is not looked upon with much respect by young people. Most institutions that have failed in their recreation programs have done so because the operating committee or the instructor or the equipment was not what it should have been.

LOUIS JALLADE,
Architect, New York City.

The Strong Recreation System Follows the Strong Demand

THE surest way to keep a municipal recreation system free from politics is to build up a strong public sentiment and demand for the recreation activities. If there is anything like a unanimous public demand which can be met without too great a sacrifice, public officials will be found pretty generally receptive, since they realize that they are dependent upon the good-will of the majority to keep them in office.

W. C. BATCHELOR,
Superintendent of Recreation, Pittsburgh, Pa.

Old-Time Parental Responsibilities Have Been Passed on to Municipalities

THE home can no longer be trusted to provide adequately for the play life of the child. The change in family conditions has largely destroyed one of the old normal centers of recreation. And not only is this true in the city where homes exist in a congestion which smothers natural activities, but the small-town and rural homes have also been affected by the speed and restlessness of modern life. Many a household gives more attention to the garage whereby parents can get away from home than to the activities of library and living-room whereby children are kept at home. This situation adds immeasurably to the responsibility of the city or community for directing the recreation of the young. Inasmuch as the cities have assumed this function more systematically and promptly than the rural sections, I believe that our cities are now the safest places in which to rear children.

THE REVEREND RALPH SOCKMAN,
New York City.

The Seven-Day Responsibility of the Church

THE church that does not provide a seven-day-a-week ministry ought to be taxed for the room it takes up. By closing their doors throughout the week churches too often tell the young people more loudly than in words to go to the devil for their good times. Laziness has often been the cause. A gymnasium and other rooms for recreation and fellowship in a church are just as important for sound religious development as the prayer-meeting room. If the body is the temple of the spirit, the church must be concerned with that spirit.

E. M. CONOVER.

And Now —

PENNSYLVANIA

Would Use The

VOTING MACHINE

WITH other progressive States, Pennsylvania is seeking to replace the paper ballot with voting machines and votes November 6th on a constitutional amendment to authorize their use at all elections.

Here, as elsewhere, the State Chamber of Commerce is a leader in the movement to vote by the modern method.

In all of New York City and in 2,000 other cities and towns, from Hartford to San Francisco, voting machines are employed today. In most cases an amendment to the existing election laws is all that is necessary to permit their use.

Voting machines make balloting swift and secret; provide immediately at the close of polls a mechanically accurate count; render spoiled ballot impossible; avoid costly recounts, and materially reduce the cost of conducting elections.

Municipal officials and other individuals or organizations are invited to send for illustrated booklets describing the operation of voting machines or to ask for demonstration.

Address Department A-2

Automatic Registering Machine Co., Inc.

JAMESTOWN ~ ~ NEW YORK

MANUFACTURERS OF

VOTING MACHINES

A Comparison of Bond Election Totals

THE total amount of bond issues approved at state and municipal elections is apparently increasing, but the proportion approved out of the total proposed is decreasing, according to figures for the first eight months of 1928, 1927 and 1926, furnished by *The Bond Buyer*, of New York City. The total of bonds approved at elections during these months in 1928 was $385,267,392, as compared with $339,173,591 and $337,818,705 for the corresponding periods of 1927 and 1926, respectively. The amount of bonds defeated, however, during this time, increased from $51,241,192 in 1926 and $120,856,530 in 1927 to $221,076,910 in 1928, using only the first eight months of each year for comparison.

There have been very large fluctuations in the figures for specific months; and the yearly totals will not show the same continuous relation, inasmuch as the 12-month total for bonds approved in 1927 was less than for 1926 ($560,714,514, as compared with $625,673,058), although it is to be expected that the 1928 total will exceed the 1927 figure at least. The yearly totals for bonds defeated in 1926 and 1927 do not show as wide a difference as do the eight-month figures, being $179,245,289 and $211,227,780, respectively.

How Baltimore Selects Its Jurors

METHODS of selecting jurors which will hasten the formation of a jury, secure the services of better jurors, and eliminate the professional juror, are occupying the attention of several state bar associations.

California, which happens to be deeply interested in this problem, has changed its law pertaining to jury selections several times, but has failed to obtain a satisfactory method.

The system prevailing in Baltimore is mentioned as one that might well be copied in California, according to the *Journal of the American Judicature Society*. As outlined by Lawrence F. Puter, a member of the Board of Governors of the State Bar, jurors in Maryland's chief city are selected by an official known as a jury judge. This official examines the qualifications of the various jurors proposed to be called, and places their names in the box for drawing upon various panels.

When a jury panel is drawn for service in a particular court, the clerk prepares a slip for the use of the attorneys, bearing the name, address and business affiliations of jurors on the panel. The counsels receive this slip in advance of the trial, and counsel for each party has the right to strike the names of four jurors from the list. Twelve of the remaining jurors become the jury in that particular case, and all questioning of jurors is done by the judge.

When a juror has served for not less than twenty days, he is discharged from further jury duty for a period of four years. This long period of exemption from jury service tends to discourage the professional juror, for, once having been excused, the juror cannot again get upon a panel for four years.

Simple in its operation, this system is said to have been received favorably by attorneys practicing under it.

Items and Abstracts for FINANCE AND LEGAL DEPARTMENTS

Police Power Given Broad Interpretation

A RECENT decision by the United States District Court for the District of Kansas, Second Division, has indicated the breadth with which the conception of the police power may be regarded.

The case is that of Mars et al. v. City of Oxford, and has to do with a city ordinance that undertook to regulate drilling for oil and gas by providing that only one well should be drilled in any given city block in a certain part of the city. Drilling was permitted only for the lessee of the largest portion of the block area; other owners had the option of participation in the expense and the output, or at least to have the usual royalty of one-eighth of all oil or gas produced from under their property.

The ordinance was sustained by the Court as within the police power and valid, and the Court took occasion to say the following as to the scope of the police power:

"Without any attempt to define police power, it is sufficient to say that the police power is not limited to the protection of the health, peace and morals of the community. It has been said to extend to acts that 'increase the industries of the state, develop its resources, and add to its wealth and prosperity.' (Barbier v. Connolly, 113 U. S. 27) and to 'promote the public convenience or the general prosperity' (C. B. & Q. Ry. v. Drainage Commrs., 200 U. S. 561)."

Articles of Special Interest

to financial officers are to be found on pages 94, 100, 109, 123, and 143; and to city attorneys, on pages 159, 167, 169, and 171.

The Municipal Bond Market

By SANDERS SHANKS, JR.
EDITOR, *The Bond Buyer*

THE character of the competitive bidding for the few important issues of state and municipal bonds sold in recent weeks is indicative of continued firmness in the market for the better-grade municipals at or a shade above the level of prices established in the early weeks of September.

Supply is the factor every municipal bond dealer or other important buyer is watching closely at this time. That new issues have not come along in greater volume since the first of September has been surprising to the investment-banking fraternity. In this connection, however, it must be kept in mind that this is the busy pre-election period when public officials are engrossed with an important task which, once every four years, calls for undivided attention. It is also a fact that this is a season when bond issues are being authorized, rather than sold. The condition of the bond market offers a partial but not the only explanation of the reduced volume of municipal borrowing. That there will be plenty of new bonds, may be taken for granted. The possibility that the market may experience a period of congestion when financing now held back is let loose is something that dealers are not losing sight of and that they will continue carefully to keep in mind.

The following table of representative issues indicates the trend of the municipal bond market at the present time:

Amount	Issue	Rate (%)	Maturity	Net Yield (%)
$25,000	Peabody, Mass.	4½	1-15 Yr. Ser.	4.10
250,000	Onondaga Co., N. Y.	4¼	11 1/6 Yr. Avg.	4.17
5,000,000	Philadelphia, Pa., Sch. Dist.	4¼	20 Yr. Avg.	4.21
4,000,000	California	4¼	12½ Yr. Avg.	4.21
640,000	North Hempstead, N. Y., Union Free Sch. Dist. No. 7	4½	22 1/6 Yr. Avg.	4.32
225,000	Tacoma, Wash.	4½	16 Yr. Avg.	4.32
2,480	Adams Co., Ind.	4½	5 1/3 Yr. Avg.	4.33
545,000	Paterson, N. J.	4½	19 Yr. Avg.	4.33
25,000	Valparaiso, Ind.	5	12¾ Yr. Avg.	4.40
400,000	Waco, Texas	4½	33½ Yr. Avg.	4.45
10,000	San Bernardino Co., Cal., San Bernardino High Sch. Dist.	5	19½ Yr. Avg.	4.46
3,723,000	Cuyahoga Co., Ohio	4½	8 Yr. Avg.	4.47
2,000,000	South Jersey Port Dist., N. J.	4½	6-45 Yr. Ser.	4.48
500,000	Los Angeles, Calif.	4⅝	10 Yr. Avg.	4.54
86,000	Scottsbluff, Nebr.	4⅝	5½ Yr. Avg.	4.67
20,000	Virginia Beach, Va.	5½	30 Yr.	5.45

Guardian of the City's Air

It is difficult, perhaps, for the hurried citizen to read the rich significance of all he sees. That building there, for instance, his city's Sterling Destructor plant, is merely another pile of stone and steel to him. But if he saw penetratingly, he would know it for the guardian of the air he breathes, for the guardian of its purity and sweetness.

The disposal of garbage and refuse in a Sterling Destructor can never give rise to offense. In the furnaces, where it is consumed in an intense fire of its own providing, every gas is completely oxidized. From those furnaces the gases pass to the stacks, sterile and odorless, and mingle imperceptibly with the air.

And there is more to the story than that. There are the construction and economy phases, told in the Sterling Destructor Booklet. Write for a copy.

THE C. O. BARTLETT & SNOW CO.
6220 Harvard Ave. Cleveland, Ohio

Bartlett - Snow

Refuse Disposal Plants

Items and Abstracts for CIVIC AND COMMERCIAL ORGANIZATIONS

A Vision of the City That Might Be

THE possibility of a free, orderly, and beautiful city became to me an absorbing passion. Here were all of the elements necessary to a great experiment in democracy. Here was a rapidly growing city with great natural advantages and with few mistakes to correct. Here was a wonderful hinterland for the building of homes, a ten-mile waterfront that could be developed for lake commerce, a population that had showed itself willing to follow an ideal, and, most important of all, a great leader.

I had an architectonic vision of what a city might be. I saw it as a picture. It was not economy, efficiency, and business methods that interested me so much as a city planned, built, and conducted as a community enterprise. I *saw* the city as an architect sees a skyscraper, as a commission of experts plans a world's fair exposition. It was a unit, a thing with a mind, with a conscious purpose, seeing far in advance of the present and taking precautions for the future. I had this picture of Cleveland long before the advent of city-planning proposals; it was just as instinctive as any mechanical talent . . . And I studied cities as one might study art;I was interested in curbs, in sewers, in sky-lines. I wrote about cities—articles and books. I dreamed about them. The city was the enthusiasm of my life. And I saw cities as social agencies that would make life easier for people, full of pleasure, beauty, and opportunity. It could be done so easily and at such slight individual expense. Especially in a city like Cleveland that had few mistakes to correct, that was flanked on one side by a lake front which could be developed with breakwaters into parks and lagoons, and with natural parkways extending about it far back into the country.

I have never gotten over this enthusiasm. I never grow tired of city-building, of city enthusiasms, city ideals. And with all of its crudities and failures I have never lost faith that the American city will become a thing of beauty and an agency of social service as yet unplumbed.

—From "The Confessions of a Reformer," by Frederic C. Howe—Charles Scribner's Sons, New York.

Evolution and Ideals of the Efficiency Movement in City Government

THE efficiency movement was at first merely an effort to eliminate waste and corruption. It aimed only to reduce the cost of government. Today, efficiency in government has a much broader meaning. It is grounded in the fundamentals of democracy. It believes that the purpose of city government is to advance the interests of all citizens of the city. City government cannot do this so long as it is controlled by political parties or other organizations or individuals interested only secondarily in the public welfare. It cannot do this with public offices and positions filled with persons selected on some other basis than their ability and fitness. It cannot do this when taxation is unjustly distributed, when public moneys are wasted. It can do this only on a basis of public confidence, and public confidence does not reside in governments not operated for public welfare.

So the efficiency movement still strikes at waste and mismanagement. But it strikes there so that it may build a government for the service of the city and its people.

A government of this kind has several essential characteristics. In the first place, it is thoroughly democratic. Its policy-determining officials are actually selected, elected, and controlled by popular vote and popular will. It is supported by public confidence. And it is responsive to the public wishes and needs. Without these no government is thoroughly democratic.

Next, it is unselfish. No interest other than the general welfare determines its policies or governs its actions.

Then it is efficient and economical. Having no interest other than the general welfare, it is anxious to give the greatest possible service at the least cost. It wishes to take as little money as possible from the taxpayers, and it wants to render all needful or desirable service. The more efficient it is, the more service it can render.

Finally, it is the leader in civic development. Understanding the needs of the city and its people, possessing vision and courage, having capable and enthusiastic officers and employees, it naturally leads in carrying on or encouraging all activities for the good of the city. It is a fundamental part of industrial development programs, because it knows the importance of industry and the importance of government in industrial development.

It encourages cultural development—art, music, drama, etc.—through moral support and active participation in popular cultural activities. Education, if not an actual part of city government, is promoted through encouragement to higher education and the many adult education projects. Health and welfare are a particular concern—reduction of sickness, crime, and poverty; extension of recreation facilities; care of the poor; helpless and delinquent; and all the many other aspects of general welfare.

The acquisition of such a city governmetn is neither impossible nor difficult.

—*Public Affairs*, published by the Kansas City Public Service Institute.

Safety Congress Offers Accident-Reduction Platform

AMONG the resolutions adopted by the Seventeenth Annual Safety Congress at New York in October was one deploring the increasing loss of life in preventable traffic accidents and calling upon all citizens to renew their efforts to reduce that toll. The Congress recommended the following platform as a basis for national action in such a campaign:

1. Immediate adoption of the accepted Standard Accident Reporting System in every state, city and town, that timely and accurate information may be obtained upon which to base accident-prevention measures.
2. A comprehensive study of the traffic situation in each city; the necessary improvement of streets, revision of ordinances and regulations and the adoption of such traffic control measures as may be necessary.
3. Acceptance of the principle of uniformity in state and city traffic laws and regulations and in the design and use of signs, signals, and pavement markings and the support and cooperation of all interested organizations and officials, with that end in view.
4. The elimination, as far as possible, of unfit and reckless motor vehicle operators, through the adoption of a driver's license law by every state.
5. Recognition on the part of both motorists and pedestrians of the rights and privileges of all users of streets and highways.
6. The furnishing of the necessary information to teachers, principals and superintendents of educational institutions, so that they may give the needed instruction to the pupils under their guidance.
7. The widest possible publicity in newspapers and other publications for the specific ways and means of preventing accidents and the importance of personal caution.
8. Intelligent and impartial enforcement of reasonable laws and regulations which are intended for the control of the minority of the people who are responsible for the majority of accidents.
9. The organization and maintenance of a community safety council, committee or other group, in each locality, which should be non-partisan, non-commercial, cooperative, representative of all interests, created to mobilize the forces of public opinion and support officials in the performance of their duties.

Kiwanis Provides Man-Power and Other Essentials to Beautify Park

THE city park of De Kalb, Ill., wasn't so much of a show place till lately, when the Kiwanis Club got busy with it. Members provided not only the shrubs and trees which were used for beautification purposes but also the spading forks and other equipment essential for planting purposes, and the muscular power by which they were wielded. The whole effect will become apparent with time.

Combatting "Sniper" Signs

THE Chamber of Commerce of Greenwich, Conn., watches constantly to keep "sniper" signs—cards tacked to posts or trees, pasted on stones or fastened to sticks in the ground—from along the highways. Whenever one is reported a telephone call is made to the organization responsible, and removal results almost always without invoking the state law against the practice.

Chamber of Commerce Men

will be especially interested in the opening article of this issue, at page 81, by President Butterworth of the Chamber of Commerce of the United States, on "Community Recreation." See also pages 15, 107, 108, 149, 153, and 158.

Cheaper to maintain— greater warning powers—no fire hazard

THE NEW EVEREADY PORTABLE FLASHER

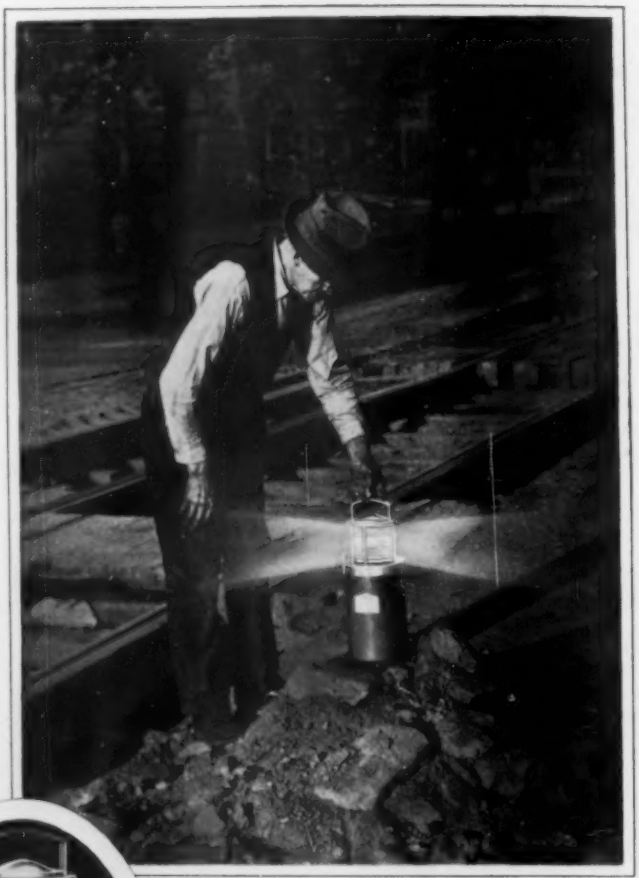
WHEREVER the kerosene oil lantern now is used as a warning signal, the new Eveready Portable Flasher can be used with large savings. While the first cost of the flasher is considerably more than that of an oil lantern, its maintenance cost is so much less that over a reasonable period of time it saves its cost and then begins to make positive reductions in your expenses.

It is estimated that the average kerosene oil lantern costs $50 per year for up-keep, including filling, cleaning, replacement of chimneys and depreciation.

The Eveready Portable Flasher, on the other hand, is ideally served by Eveready Columbia Dry Cells, one set of which lasts approximately two months on a basis of continuous burning, at a cost of about $10 per year.

Additional savings are realized from the fact that the greater warning power of the intermittent flash enables one flasher to displace several oil lanterns—and give greater protection.

The batteries used are standard six-inch Eveready Columbia Ignitors, universally obtainable for replacements. The intermittent flash uses their capacity to best advantage, making them last much longer than they would under a steady load.

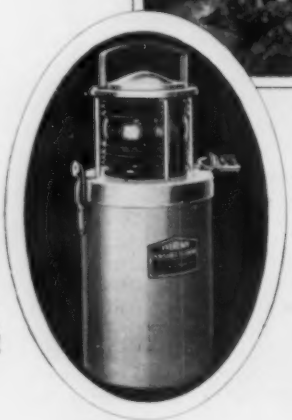


NATIONAL CARBON CO., Inc.
New York, N. Y.

Branches

Atlanta Chicago Kansas City
Long Island City San Francisco

Unit of Union Carbide and Carbon Corporation



EVEREADY
TRADE MARK
PORTABLE FLASHER
—dry battery operated

SPECIFICATIONS

Height, 16 inches; diameter of base, 7 inches; weight, including batteries, 16½ lbs. The Eveready Portable Flasher is entirely automatic. Needs no attention other than to replace batteries at intervals of two to three months. Requires four standard Eveready Columbia 6-inch dry cells connected in series to deliver 6 volts. Extra 6-volt lamp inside battery housing. Battery compartment constructed of seamless steel attractively finished in red. Top of flasher cadmium plated for weather protection. Heavy Fresnel type red glass lens. Padlock for battery compartment with an extra long hasp so that the device can be chained. This flasher is of rugged construction throughout and entirely weather-proof.

"Raising the Whip" as a Signal When Slowing, Stopping, Turning or Starting

THE short span of time during which the multitudinous motor car has banished the horse and buggy from our city streets is brought forcibly to mind by the fact that printed traffic rules were first issued in New York just twenty-five years ago. But the skill and foresight which went into the drafting of these rules is evident from the reproduction of them to be found on page 135 of this issue.

See how nobly the whip served the situation:

Article II. Signals.

Sec. 1. In slowing up or stopping, a signal shall always be given to those behind by raising the whip or hand vertically.

Sec. 2. In turning, while in motion, or in starting to turn from a standstill, a signal shall be given by raising the whip or hand, indicating with it the direction in which the turn is to be made.

The Rules have formed the basis on which all later traffic codes in New York City have been built; and the influence of this little 4-page folder can be traced in the 34-page Model Municipal Traffic Ordinance recently issued by the National Conference on Street and Highway Safety.

Who Should Pay for Accidents to Commandeered Cars or Drivers?

IN the pursuit of criminals the police frequently find it necessary or advantageous to impress into service an automobile, and usually its driver, that may be at the scene of action. In some instances, accidents have occurred to the driver, the car, or both, and in such cases the matter of responsibility for compensation is in an indecisive state. In one instance, a commandeered taxicab collided with a street car while chasing another car under orders of a policeman, and the driver was killed. When an award for workmen's compensation was made to the driver's family, the insurance company involved contended that the chauffeur had been taken out of his regular employment, but this view was overruled by the appellate court. In another case, the city of New York voluntarily paid a substantial sum to the widow of an automobile driver as a recognition of a moral, though not a legal, responsibility. In another case, a driver owning his own cab wrecked it in pursuit of a criminal under police orders, and the question has arisen whether he should be compensated by the city for the cab, which was the means of support for himself and his family.

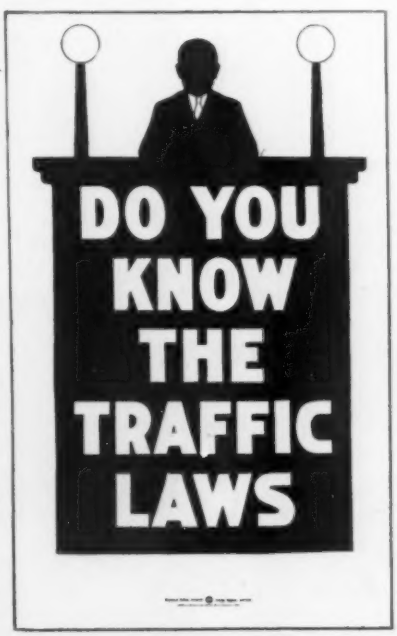
The law does not give much relief in the case of persons injured or property damaged under these circumstances, and the cities are not likely to desire stringent legal obligations that may unduly hinder them in the exercise of governmental functions, but they should therefore be all the more ready to extend fair and even generous treatment in such cases, based upon humanity and common sense. The New York *Sun*, in commenting editorially upon these conditions, urges that it be the policy of the city to deal as equitably with property damages as with personal injuries.

Items and Abstracts *for* DEPARTMENTS *of* PUBLIC SAFETY

Large Cities Holding Fires in Check

IN 50 representative cities last year, an average of only 2 per cent of the 147,188 fires which broke out were not confined to the places of origin, according to a recent survey by the Continental Insurance Co. The percentage of fires kept under control and not permitted to spread in the municipalities studied, ranged from 96 per cent to 100 per cent and averaged in general about 98 per cent, the survey discloses.

Although the more general use of motor equipment must be considered an important factor in this record, C. W. Pierce, Vice-President of the company, asserts that prompt response to alarms and intelligent attacks upon the flames were largely responsible. The survey shows that in general, however, cities in the South and Southwest were less successful in holding fires in check than were municipalities in other sections. This is considered due to the fact that climatic conditions permit less substantial construction in these sections rather than to any fault in extinguishment methods.



ONE OF A SERIES OF POSTERS OBTAINABLE FROM THE NATIONAL SAFETY COUNCIL, CHICAGO

American Automobile Association Seeks Better Care of Injured

A PROGRAM aimed to obtain increased efficiency in the treatment of motor accident victims and the improvement of hospital conditions, was outlined October 12, by Thomas F. Henry, President of the American Automobile Association, before the convention of the American College of Surgeons at Boston.

Thousands of the 750,000 automobile injuries reported in 1927 were received far from home and often in remote rural districts where emergency treatment was slow and hospital conditions far from perfect, the Association official said.

The American Automobile Association's program for the better care of the injured embraces the following points:

1. Distribution of the "Accredited List" of hospitals approved by the College of Surgeons to 1,065 motor clubs affiliated with the A. A. A. in the United States and Canada, the clubs to use this information for advising their members and the motoring public in general.

2. The placement of hospital locations on A. A. A. maps of metropolitan areas, and the insertion of information regarding up-to-date hospitals in A. A. A. tour books.

3. Special A. A. A. emergency road service for physicians and surgeons which gives them a preferential status over all other motorists in trouble.

4. The sponsoring of a movement to remove speed limits in the case of bona fide physicians and surgeons on emergency calls.

5. Extermination of the ambulance-chasing evil whereby mercenary members of the medical and legal professions turn human suffering into personal gain.

Mr. Henry charged that there exists a great degree of commercialism among some members of the medical and legal professions, who prey upon the injured. He believes that through the cooperation of the College of Surgeons with the American Automobile Association and other such agencies, this condition can be alleviated to a considerable degree.

A Lesson in Courtesy

IN Quito, Ecuador, the traffic cops, when stopping one stream of automobiles to let another pass, invariably bow to the motorists thus temporarily halted and say suavely: "With your permission, ladies and gentlemen."

Does anybody doubt that this is a distinct contribution to the beauty of life? It is a constant reminder of the charm of courtesy. It demonstrates that politeness is always possible. If a traffic cop has time for good manners, what excuse is there for anybody to be rude, on the road or anywhere else?

—*American Automobilist.*

The Following Titles

in this issue are of special interest to public safety officials: "Conservation of Property at Fires" (p. 153); "New York's New Method of Investigating Causes of Fatal Traffic Accidents" (p. 134); and "Recommendations as to Street Traffic Signs" (p. 145). See also about police training schools in New York and New Jersey, page 107.

Through Streets are SAFE STREETS!

Flexible Rubber STOP Signs at Approaches to THROUGH Streets Control Traffic Effectively

Speed Up Traffic!

The big point in designating "through streets" is to speed traffic away from congested centers. But to increase speed without regard for intersecting traffic is dangerous. Every through street should be protected by "stop" signs.

Decrease Accidents!

The perfect "stop" sign is that sign which can be seen most readily and which does not take the driver's eyes from traffic when approaching intersections. To compel a driver to seek out signs at the curb or on lighting posts is placing a premium on accidents.

The Problem Is Solved!

Directly in front of the driver on the pavement is the ideal place for "stop" signs. The *Sure Stop Flexible Rubber Marker* is the only one so placed that is not dangerous to traffic. A driver is both blind and dumb who fails to see them.

Cost Is Reasonable!

The *Sure-Stop Rubber Marker* stands upright in the pavement and is easily visible, day or night, at *safe* distances. *Every Sure-Stop is guaranteed to give you a whole year of efficient service* and is easily installed with no injury to the pavement. They are cheaper than painted lines and far more effective.

Sure-Stop Rubber Markers are made for a variety of purposes in marking traffic besides "stop" streets. We will be glad to send you the complete list and prices.

There is a SURE-STOP for Every Purpose!

Write for Prices

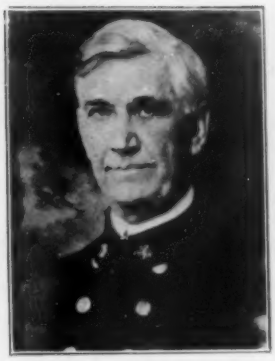
STANDARD TRAFFIC MARKER COMPANY

1711-1713 East Second St., Wichita, Kansas

Exclusive Manufacturers of Flexible Rubber Traffic Markers

CLAUDE M. WORLEY
Police Chief, Indianapolis, Ind.
(Appointed 1927)

BARNEY J. HOUSTON
Fire Chief, Cincinnati, Ohio
(Appointed 1916)



FRED J. MYERS
Fire Chief, Toledo, Ohio
(Appointed 1927)

A. E. MANNING
Police Chief, Elkhart, Ind.
(Appointed 1921 and 1927)

H. A. KING
Fire Chief, East Cleveland, Ohio
(Appointed 1924)

WHO'S WHO IN PUBLIC SAFETY

A Series of Portraits of Fire and Police Chiefs, Begun in the January, 1928, Issue

JAMES J. HATT
Police Chief, South Bend, Ind.
(Appointed 1926)

WILLIAM F. EVERSMAN
Police Chief, Richmond, Ind.
(Appointed 1922)

JOSEPH H. SPEDDY
Fire Chief, Lakewood, Ohio
(Appointed 1912)

ROLLIE H. BENSON
Police Chief, Kokomo, Ind.
(Appointed 1926)

EDWARD J. GREEN
Fire Chief, Steubenville, Ohio
(Appointed 1918)

E. F. REED
Fire Chief, Middletown, Ohio
(Appointed 1919)

PETER HANSEN
Police Chief, Muskegon, Mich.
(Appointed 1919)

C. M. DAY
Fire Chief, Huntingburg, Ind.
(Appointed 1926)

WILLIAM J. JOHNSTON
Fire Chief, Marquette, Mich.
(Appointed 1914)

BRITEMARK traffic markers more permanent than the pavement

More than 120 leading cities in the United States, Canada, and Europe are using the BRITEMARK *way of pavement marking.* BRITEMARK *Traffic Markers afford a safe, as well as permanent and economical way of indicating safety lines and traffic zones on all types of pavement; 3½ in. in diameter for heavy traffic and 2½ for light traffic.*

Capped with heavy, non-rusting, long wearing Monel Metal°—plainly visible in all kinds of weather, day or night.

Base and stem made of special heat treated, malleable iron defies pounding of heavy traffic.

Stem cast integral with base insuring permanence and strength.

Prongs spread when driven into pavement forming permanent anchorage in any pavement, granite block, brick, wood block, cement or asphalt.

Wood plug starts the prongs spreading.

METAL TRAFFIC MARKER CORP.

67 WALL STREET, NEW YORK, N. Y.

Distributors in all principal cities

°Monel Metal is a technically controlled Nickel-Copper alloy of high Nickel content. It has no coating to wear off. It is rust-proof, corrosion-resistant and as strong as steel.

Metal Traffic Marker Corp., 67 Wall St., New York
Please have your nearest distributor send me full information and quotations on your BRITEMARK Traffic Markers.

Name.....

Position.....

Address.....

City..... *State*.....

AC 11-28

WHAT'S NEW IN CATALOGS

Keep your files up to date by checking over these items each month and writing for those you need.

THE AMERICAN CITY should should always be mentioned when writing for this material which is furnished free.

TANKS, BOILERS, CASTINGS

J. S. Schofield's Sons Co., Macon, Ga., will gladly send data and prices on its line of tanks of all kinds, standpipes, engines, boilers, meter boxes, curb boxes, manhole rings and covers and other municipal castings, to interested municipal officials.

DIESEL ENGINES

Fairbanks-Morse & Co., Chicago, Ill., will be pleased to send complete information and prices regarding Fairbanks-Morse diesel engines and pumps for municipal water and power stations.

A DRY BATTERY FLASHER

Technical Publication No. 86 issued by Wallace & Tiernan Co., Inc., Newark, N. J., gives full details regarding the W & T dry battery flasher, which is dependable under all conditions, is cheap to install and maintain, and requires no attention but the changing of batteries once in six months.

FROST-PROOF WATER-METERS

Information on Federal ⅝-inch, ¾-inch and 1-inch frost-proof meters which are especially designed for cold-climate conditions, having main casings made of high grade bronze composition and fitted with breakable, rust-proof cast iron bottoms which are held in place by bronze bolts and nuts, may be secured from the Federal Meter Corp., East Orange, N. J.

SEWER RODS

Security sewer rods, which are made from second-growth hickory with malleable iron couplings swedged or shrunk down on the curved places at the ends of the sticks, and which are light in weight and joint and unjoint easily but cannot buckle or uncouple in the duct, are described in Flyer No. 16 issued by the F. Bissell Co., 812 Lafayette St. Toledo, Ohio.

TREES, FLOWERS AND SHRUBS

Roses, evergreens, rhododendrons, trees, shrubs, old-fashioned flowers, fruit trees and bushes for city planting are described with prices in the catalog of Bobbink & Atkins, Rutherford, N. J.

MOTOR AND STEAM ROLLERS

Literature describing the Buffalo-Springfield line of motor and steam road rollers in a complete range of sizes, which have all modern features with special attachments optional, may be secured from the Buffalo-Springfield Roller Co., Springfield, Ohio.

CAST IRON PIPE DATA

Technical data for engineers and valuable advice for municipalities pertaining to gas or water systems are available to those interested through Thomas F. Wolfe, Engineer, Cast Iron Pipe Research Assn., Peoples Gas Bldg., Chicago, Ill.

IRON JOINTED PIPE

Universal pipe on which the machined hub end and the machined spigot end as well as the pipe itself are all cast iron, and which requires no jointing material and no pouring, caulking or bell holes, is manufactured by the Central Foundry Co., Graybar Bldg., 420 Lexington Ave., New York, from which complete information may be secured.

DISTRICT WATER STORAGE

The Chicago Bridge & Iron Works, 2127 Old Colony Bldg., Chicago, Ill., makers of Horton elevated storage tanks, will be pleased to send estimating data on the installation of elevated storage tanks for district storage of water at strategic points in the system to provide adequate fire pressure and more uniform supply for domestic service under all conditions.

HAND AND MOTOR LAWN-MOWERS

The literature of the Coldwell Lawn Mower Co., Newburgh, N. Y., gives complete descriptions of its full line of hand or horse-drawn, gasoline or electric motor-driven lawn-mowers for all types of service.

TREES AND SHRUBS

A new price list on ornamental trees, flowering shrubs and evergreens for street and park planting is now available from Wyman's Framingham Nurseries, Framingham, Mass.

REFUSE AND GARBAGE BODIES

Full particulars on Galion Allsteel garbage and refuse bodies to meet the exacting requirements of municipalities, as well as dump bodies for every truck and hauling purpose, may be secured from the Galion Allsteel Body Co., Box 10, Galion, Ohio.

A CODED SIGNAL ALARM

A bulletin completely describing the Diaphone, a compressed-air-operated public alarm with a distinctive and penetrating tone that will sound a coded signal transmitted from a standard street fire-alarm box, may be secured from the Gamewell Co., Newton Upper Falls, Mass.

WARPLESS METER DISCS

The Fred W. Hanks Co., 10264 St. Clair Ave., Cleveland, Ohio., has issued an illustrated booklet describing Nowarp discs, which will withstand heat up to 270 degrees without injury, the meter showing the same accuracy as before, down to and including a 1/32-inch stream.

ACCURATE WATER METERS

Hersey disc water meters, which are dipped-tinned for protection against corrosion, and in which friction, wear, and resistance are reduced to a minimum, are manufactured by the Hersey Manufacturing Co., South Boston, Mass., from which complete information may be secured.

PUBLIC PLAYGROUNDS

The Hill-Standard Co., Anderson, Ind., will be pleased to send catalogs and any information desired concerning their complete line of apparatus for playgrounds, to officials interested.

POWER LAWN-MOWERS

A catalog describing Ideal power lawn-mowers with their dependable operation and low operating costs through long years of service, may be secured from the Ideal Power Lawn Mower Co., 400 Kalamazoo St., Lansing, Mich.

MUNICIPAL STREET BROOMS

The Jos. Lay Co., 1900 Wayne Ave., Portland, Ind., has issued a Municipal Folder describing its brooms, which are made of the choicest selection of materials, including Prime African bass fiber.

SELF-CALKING PIPE JOINTS

The Leadite Co., Land Title Bldg., Philadelphia, Pa., will be pleased to send complete information regarding Leadite, a self-calking material for cast iron pipe joints.

STREET-LIGHTING RECOMMENDATIONS

A copy of a small bulletin, "Principles of Modern Street Lighting," giving lighting recommendations for any type of street, together with the underlying principles which govern modern street lighting, will be sent on request by W. D. Kyle, The Line Material Co., South Milwaukee, Wis.

CAST IRON WATER PIPE

The McWane Cast Iron Pipe Co., Birmingham, Ala., will gladly send illustrated literature describing the manufacture and use of McWane cast iron pipe, which is molded horizontally in sand, inside and outside, giving long life, strength and uniformity.

ACCURATE AND STRONG WATER METERS

Circular 202 issued by the National Meter Co., 299 Broadway, New York, fully describes the Nash disc type water meter, which is accurate, strong, and simple in design, with a well-balanced conical reinforced disc and with or without the frost protection feature.

WARNING SIGNALS

The Redflex warning signal, which appears by day as a red square surmounted by the word "Danger" and at night reflects the light from automobile headlights as a red light which instantly warns of danger, is manufactured by the Redflex Signal Co., Greeley Terminal, Cleveland, Ohio, from which complete information may be secured.

ELECTRIC TRAFFIC SIGNALS

Traffic Signal Catalog 224 describing installations of Crouse-Hinds electric traffic signals will be sent on request by the Crouse-Hinds Co., Syracuse, N. Y.

WATER-WORKS PUMPS

City officials interested in a dependable, pure water-supply for their communities should write to the De Laval Steam Turbine Co., Trenton, N. J., stating their pumping requirements, and ask for a copy of Catalog B-64.

CAST IRON PIPE

Information of value to city officials regarding cast iron pipe for water and gas service, as well as special castings and flange work, may be secured from the Donaldson Iron Co., Emaus, Lehigh Co., Pa.

HOW TO CURE CONCRETE

This is the title of a free booklet issued by the Dow Chemical Co., Midland, Mich., manufacturers of Dowflake, which when added to the concrete mix in the form of a solution, does away with the extra labor and expense of earth covering and results in a faster-setting, more uniformly cured slab.

VALVES AND FIRE-HYDRANTS

Full details regarding Eddy fire-hydrants and the Eddy valve, in which the gates are free to revolve on the trunnions so as not always to seat in the same position, may be secured from the Eddy Valve Co., Waterford, N. Y.

STEEL POLES FOR STREET LIGHTING

The Electric Railway Equipment Co., Cincinnati, Ohio, will be pleased to send information and catalogs on Elreco steel poles for use in modern street-lighting systems.

CHLORINE SEWAGE TREATMENT

Facts bearing on the problem of treatment of sewage and industrial wastes through the use of E B G liquid chlorine, are contained in literature which will be sent on request by the Electro Bleaching Gas Co., Niagara Falls, N. Y.

A FIRE REPORT RECORD BOOK

Fire officials interested in the Daily Fire Report Record Book issued by the Eureka Fire Hose Mfg. Co., 50 Church St., New York, as well as complete data on Paragon and other brands of Eureka fire-hose, may secure these without obligation from this company.

RUBBER-LINED FIRE-HOSE

Complete data and prices on wax and Para gum-treated fabric, rubber-lined fire-hose manufactured by the Fabric Fire Hose Co., 9-15 Park Pl., New York, will be sent on request by this company.

CLIMBING FOR CHILDREN

The Junglegym, a climbing structure for developing health, happiness and fun for children, is described in the catalog of the Playground Equipment Co., Inc., 122 Greenwich St., New York, a copy of which will be sent free on request.

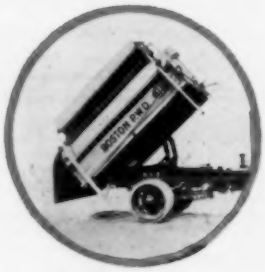
HOUSE NUMBERING

City officials interested in a workable method of house numbering for their cities, should secure a copy of the Premax Portfolio of Modern House Numbering Methods, which is an interesting booklet on the different systems of house numbering used by representative cities, from Premax Products, Inc., Dept. AC11-28, Niagara Falls, N. Y.

ATIA

Hauling

ASH AND GARBAGE COLLECTOR



Dumping

Women watched from their windows and doorways giving expression to their feelings with such words as, "Isn't it wonderful?" and "Isn't it a quick and clean way to remove garbage?"

—The cause for all this favorable comment was the ATIA ASH AND GARBAGE COLLECTOR, with its entirely enclosed body and its simple, clean, speedy, automatic collecting system.

The letter below is just another illustration of the way in which ATIA *Ash and Garbage Collectors* are proving highly satisfactory and greatly reducing costs.

BOROUGH OF RUTHERFORD, NEW JERSEY
Office of the Mayor

HAROLD R. FRIZZELL
Mayor

September 8, 1928

Atia Sales Corporation,
206 Broadway,
New York, N. Y.

Gentlemen:

Replying to your recent inquiry, the garbage and ash collections in this Borough are now being effected with three trucks equipped with Atia bodies.

These bodies have been in service for over two years during which period they have functioned satisfactorily and have brought about marked economy in handling. The collections have not only been effected more rapidly than formerly but also at an appreciable saving in cost. Each truck is now operated by two men, a chauffeur and a loader as compared with a crew of from four to five men per truck required in the previous method of handling.

The Borough has experienced an abnormal growth in population during the last three years and in our opinion it would not have been practicable to have satisfactorily handled the increased volume of ashes and garbage which resulted therefrom with any other type of equipment.

Yours truly,
HAROLD R. FRIZZELL,
Mayor

This apparatus is fully covered by patents

Any infringements will be vigorously prosecuted

Loading: Only 30-inch lift above curb

Send your name and address for a copy of our illustrated circular

ATIA SALES CORPORATION

206 BROADWAY **NEW YORK CITY**

A MERRY-GO-ROUND FOR PLAYGROUNDS

R. L. Lamar & Co., 443 Thatcher Bldg., Pueblo, Colo., has issued a very interesting booklet describing the Karymor merry-go-round for playgrounds, its installation and operation.

CULVERTS AND DRAINS

Bulletin H-34, "Selecting Culverts and Drains on the Basis of Cost per Year," is a 24-page illustrated booklet recently issued by the Armco Culvert Manufacturers Assn., Middletown, Ohio, giving a review of the factors which, when collectively considered, permit true cost comparisons between structures serving the same purpose.

BRICK PAVEMENTS

Complete information regarding brick pavements, which resist weather and traffic, may be secured without obligation from the National Paving Brick Manufacturers' Assn., Fourteenth & F Sts., Washington, D. C.

CLEAN WATER-MAINS

The National Water Main Cleaning Co., Hudson Terminal Bldg., New York, will gladly send complete information regarding The National Method of cleaning watermains to city officials interested in this important service.

CONQUERING DUST

This is the title of a free booklet on dust prevention and the maintenance of gravel roads through the use of Columbia 3-C calcium chloride, which may be secured from the Columbia Chemical Division, Pittsburgh Plate Glass Co., Barberton, Ohio.

JACKS FOR PUSHING PIPE UNDERGROUND

Simple pipe-pushing jacks that enable you to push water or gas pipe, or pipe for electrical service or for oil heating supply, under paved streets or alleys, or under gardens or lawns, irrespective of temperature conditions, that take an average of five or six minutes for pushing a 3-inch pipe through 25 inches of solid soil, and that can be operated by one or two men, are described in an illustrated circular of Templeton, Kenly & Co., Ltd., 1020 S. Central Ave., Chicago, Ill.

CALIFORNIA BENCHES

These benches, while they originated in California, are now well known all over the United States and particularly in Florida. The Art Concrete Works have three Pacific Coast plants and three southern plants, located at Birmingham, Jacksouville, and Houston, from which the complete benches may be obtained, or the concrete ends only, at economical delivery cost. For points too far distant they will furnish the cast iron equipment itself for producing these concrete ends as covered by their various U. S. patents. Catalogs will be furnished on request to Art Concrete Works, 116 S. 22nd St., Birmingham, Ala., or 350 S. Fair Oaks Ave., Pasadena, Calif.

SLIDE-GATE HYDRANTS

A folder describing Ludlow slide-gate fire-hydrants, which have always been made of the best materials and in which the interchangeability of parts has been maintained for forty years, may be secured from the Ludlow Valve Mfg. Co., Troy, N. Y.

TORCHES AND KETTLES

Catalog A of the White Mfg. Co., Elkhart, Ind., describes this company's line of Chausse-White oil-burning tar kettles, kerosene torches, lead-melting kettles, concrete mixer heaters, and portable asphalt plants.

SEALED FLOOR STANDS

A floor stand for use with sluice-gates in hydro plants and also on water-works intakes, which is completely sealed, has been developed by the Rodney Hunt Machine Co., Orange, Mass., and is described in the WCA Broadcast, Vol. 5, No. 286, issued by this company.

MOTOR-TRUCK SNOW-PLOWS

Complete information and prices on Western snow-plows, which are made in both straight-blade and V-shaped plows for mounting on 2-ton or larger motor trucks and on which the blades are interchangeable, may be secured from the Austin-Western Road Machinery Co., 400 N. Michigan Ave., Chicago, Ill.

THE CITY SURVEY

Service Booklet "E," "The City Survey, Standards and Practice," has been published by W. & L. E. Gurley, Troy, N. Y., manufacturers of surveying instruments, hydraulic engineering instruments and standard weights and measures, to bring the city survey prominently before those of the engineering profession who should welcome having tangible data upon which to base their operations.

TESTED PUMPS

The catalog of Yeomans Brothers Co., 1417 Dayton St., Chicago, Ill., describes Yeomans pumping equipment, which, because of the rigid tests made on each type and size of pump at the plant, lives up to the claims made for it.

CONCRETE HIGHWAY SURFACER

The Berg concrete highway surfacer, a one-man machine for cutting down high spots, surface irregularities, uneven expansion joints and repaired patches on concrete roads, is described in a folder which may be secured from the Concrete Surfacing Machinery Co., 4669-71 Spring Grove Ave., Cincinnati, Ohio.

FIRE-FIGHTING EQUIPMENT

Deluge Master fire fighters, which are available in capacities ranging from 300 to 600 gallons per minute and in various combinations to meet special requirements, are described in literature of the Prospect Fire Engine Co., Prospect, Ohio.

A MANUAL OF SNOW CONTROL

Form 303, "Manual of Snow Control —1928-1929," is a 48-page discussion of the various means of keeping highways open, with their advantages and disadvantages, which may be secured from the Rotary Snow Plow Co., Minneapolis, Minn., manufacturers of Snow King rotary snow-plows.

PNEUMATIC LIFT FOR SNOW-PLOWS

Complete information regarding a pneumatic lift for snow-plows attached to trucks and busses, which has been developed by the Engineering Dept. of the Good Roads Machinery Co., Kennett Square, Pa., in collaboration with the White Motor Truck Co., Cleveland, Ohio, and the Westinghouse Air Brake Co., Wilmerding, Pa., may be secured on request from the Good Roads Machinery Co.

NEW PORTABLE FLASHING LANTERN

The National Carbon Co., 30 E. 42nd Street, New York, will gladly send complete information and prices regarding the new Eveready portable flasher, which has been designed primarily for use, wherever lanterns are now needed and provides an intermittent or flashing signal of much greater visibility than an oil lantern, besides being of rugged construction throughout and entirely weatherproof.

QUALITY CONCRETE

This is the title of a new 8-page pictorial bulletin, No. 340, giving a concise story on workability and methods by which the relative degree of workability of concrete mixes can be measured, and the effect of workability on strength, uniformity, watertightness and appearance of the finished concrete, copies of which may be secured from the Celite Products Co., 1230 South Hope St., Los Angeles, Calif.

EFFECTIVE PROTECTIVE WEAPON

The Federal Protect-O-Gun, which can be carried in the pocket as conveniently as a pencil and be instantly accessible, and which shoots an effective concentration of gas that instantly renders harmless anyone at whom it is aimed, is described in a folder published by the Federal Laboratories, Inc., 1631 Libert Ave., Pittsburgh, Pa.

MUNICIPAL USES OF SIRENS

A bulletin, No. 660, which takes up traffic-clearing systems, coded and non-coded fire-alarm systems, intermediate sirens and apparatus sirens, and a discussion of the various applications of sirens to municipal use, has been prepared by the Engineering Dept. of the Sterling Siren Fire Alarm Co., Inc., 53 Allen St., Rochester, N. Y.

SNOW REMOVAL BY MACHINERY

The snow loader made by the N. P. Nelson Iron Works, 822 Bloomfield Ave., Passaic, N. J., consists of a powerful excavating spiral or feeder and a scraper flight conveyor for elevating the snow to the trucks, all mounted on a slow-speed tractor. Complete information and prices may be secured from the manufacturer on request.

CONCRETE BLOCK MANHOLES

Bulletin P-109 of the Portland Cement Assn., 33 W. Grand Ave., Chicago, Ill., describes radial concrete block for manhole and catch-basin construction and also gives the American Concrete Institute tentative specifications for concrete sewer manhole and catch-basin block.

WATER QUESTIONS ANSWERED

The Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has invested in equipment and laboratories for the testing of its Tropic and Arctic water meters and will be glad to answer questions in connection with corrosion, water analysis or electrolysis or to assist in working out difficulties.

FIRE-FIGHTING APPARATUS

Complete information and prices on the Ahrens-Fox complete line of fire-fighting apparatus may be secured without obligation by writing to the Ahrens-Fox Fire Engine Co., Colerain Ave., Alfred and Cook Sts., Cincinnati, Ohio.

CENTRIFUGAL PUMPING UNITS

The Allis-Chalmers Mfg. Co., Milwaukee, Wis., will gladly send complete data regarding its complete line of centrifugal pumps for almost any requirements, or their combined units consisting of pump and motive power of Allis-Chalmers manufacture which furnishes a complete unit with both pump and drive properly proportioned.

CORROSION-RESISTING WATER PIPE

Anaconda-85 red brass pipe, which is the highest quality corrosion-resisting water pipe for service lines, is manufactured by the American Brass Co., Waterbury, Conn., from which complete descriptions and prices may be secured.

C. I. PIPE AND SPECIAL FITTINGS

The American Cast Iron Pipe Co., Birmingham, Ala., will welcome inquiries regarding special pipe and fittings to specification and will also send data and prices on Acipco pipe for all types of installations.

NEW PLAYGROUND CATALOG

The 1929 Catalog of the American Playground Device Co., Anderson, Ind., describes this company's complete line of playground apparatus, which is built with strength for hard usage.

NEW CONCRETE-CURING METHOD

The Curcrete booklet of the Barber Asphalt Co., Philadelphia, Pa., tells all about the new and improved Curcrete method of curing concrete highways, foundations, sidewalks, platforms, floors, bridge decks, roof decks or any flat slab surface concrete construction with emulsified asphalt and without the use of wet hay, straw, earth or burlap.

DIESEL ENGINES

The engineers of the Bethlehem Steel Co., Bethlehem, Pa., will gladly cooperate with city officials in solving power problems through the use of Bethlehem diesel engines, which are built in units of 2, 3, 4 and 6 cylinders and in sizes ranging from 50 to 570 horsepower.

AN ALL-ANGLE NOZZLE

The Gilson all-angle nozzle, which gets a fire stream into the difficult places the straight nozzle cannot reach, and which may be used on a ladder while the firemen direct it from a point below out of danger, is described in literature which may be secured from F. H. Lovell & Co., Arlington, N. J.

NEW LIGHT FOR AIRPORTS

The B.B.T. Corp. of America, Atlantic Bldg., Philadelphia, Pa., has recently announced a new auxiliary landing-field light using a 2,000-watt lamp for mounting on top of the airmail type or intermediate air type landing floodlights, on which it will be pleased to send information to city officials interested.

NEW MOTOR PATROL GRADER

A new Russell patrol grader, No. 6, for use with a Caterpillar Twenty tractor, has recently been announced by the Russell Grader Mfg. Co., Minneapolis, Minn., from which complete information and prices may be secured on request.

A QUICK-SLAKING LIME FOR WATER SOFTENING

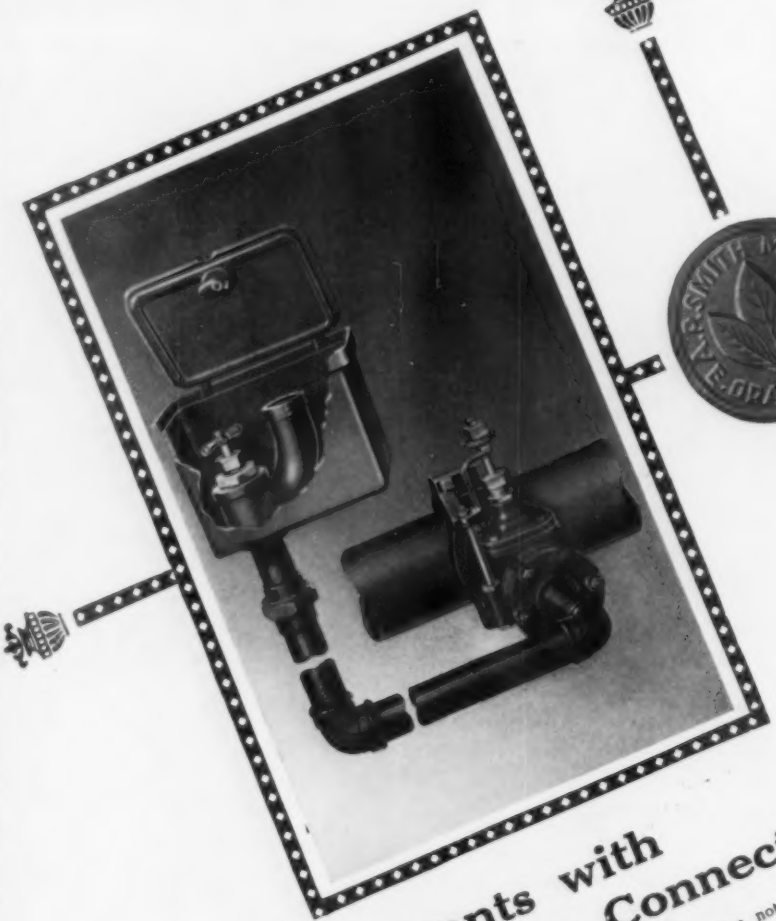
The Louisville Cement Co., Inc., Speed Bldg., Louisville, Ky., manufactures a quick-slaking pebble lime, which combines to an even higher degree the exceptional purity, efficiency, uniformity and economy which have characterized its limes for over 50 years. The average calcium oxide content is 95 per cent. Complete information regarding the use of this lime in water softening may be secured from the manufacturer.

AN INEXPENSIVE SYPHON

A folder describing the M & M water power syphon which is designed to eliminate the destructive process of pumping dirty waste water from cellars and excavations with an expensive fire pumper, may be secured on request from the P-B Mfg. Co., Inc., 4567 Swan Ave., St. Louis, Mo.

NEW FIRE-FIGHTING SYSTEM

A system of carbon dioxide protection against fire, known as the Aliite system, has been announced by the American-LaFrance and Foamite Corp., Utica, N. Y., from which complete information and prices may be secured on request.



Protect Fire Hydrants with SMITH Sprinkler Connections!

MORE and more, cities are forbidding the use of regular street hydrants to everyone not a member of the regular fire departments or an employee of the water departments who is so privileged.

In far too many instances, they have found their regular fire hydrants out of service when most needed in an emergency because their stems have been twisted or their coupling-threads made unusable, due to the careлessness of contractors, sprinkler-cart men or others who have constantly used them but failed to report their damaged condition.

Such cities are installing Smith Curb-Box Sprinkler Connections for this class of water users, finding that they more than save the cost of installation by saving in repairs on regular hydrants and in the amount of water used, since regular hydrants are very generally left leaking.

These Curb-Box Connections are sunk in the ground or sidewalk. Lawn mowers easily clear them. They are easily connected to the main or regular hydrant branch by a Smith Tapping Sleeve and Tapping Valve (with drip attachment).

Smith Tapping Apparatus—Tapping Sleeves and Valves — O'Brien Hydrants—Valve-Inserting Machines — Lead-Melting Furnaces

Removable Plugs — Pipe - Cutting Machines — Corporation Tapping Machines — Corporation Brass Goods

SMITH
WATER WORKS SPECIALTIES & SUPPLIES
THE A.P.SMITH MFG.CO. *East Orange,N.J.*

Vol. XXXIX
No. 5

The American City

NOVEMBER
1928

443 Fourth Avenue
New York

50 Cents
$4 a Year

Community Recreation—a Wisely Human, Wisely Industrial, Wisely Economic Thing

An Address Before the Fifteenth Annual Congress of the Playground and Recreation Association of America, at Atlantic City, N. J., Oct. 2, 1928

By WILLIAM BUTTERWORTH
President, Chamber of Commerce of the United States

A FEW years ago a chamber of commerce secretary, taking a new position in a western mining town, was disturbed to find constant labor turnover which was costing the mining company a sizable amount of good, hard money. He set out to find the reason. He interviewed man after man who had either given notice that he intended to leave or about whom an intention of so doing was rumored. He quickly discovered that it was not the pay and not the hours with which the employees were dissatisfied.

"Well, what is the matter? Why are you going away?" he asked.

Then from each one he received variations of an answer given by one of the more expressive of the men, who vigorously declared: "I'll tell you why: simply because this is a hell of a town to live in."

Pressed for details, the man demanded: "Why, what is there to do after the day's work is over? Nothing but to go to that cheap movie, and we get sick of that. There are no ball grounds, no tennis courts, nothing."

Copyright, Harris & Ewing, Washington, D. C.
WILLIAM BUTTERWORTH

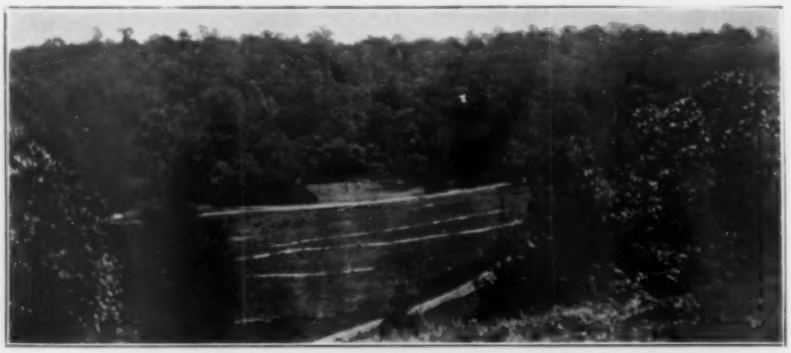
So that was it! It was an eye-opener to the secretary. He got busy. He saw the mine bosses, explained the situation, and prepared a plan which they wisely approved. To make a long story short, a baseball field with a running-track around it was laid out, a tennis court was provided, a band and dramatic group were organized. Entertainments and social affairs were arranged for. The natural human desires of the men and their families were thus met. The secretary stopped that procession out of town which practically told others to steer clear of the place. He sold the town to its own people. Incidentally, he saved the company much money. He did a wisely human, wisely industrial, wisely economic thing. The town could then tell the world it was no longer a "hell of a place to live in."

Industry is generally alive today to the bearing recreational opportunities have on factory location. One of the field secretaries of the Playground and Recreation Association, discussing this matter with a chamber of commerce secretary in a large Pennsylvania town last May, was told that during the past two years or more, five out of every six industries with which he had corresponded had included among the questions asked, "What park and public recreation facilities have you?" Recently the head of a large manufacturing concern in Chicago was considering moving his plant to a certain Indiana city. One of his leading questions to the chamber of commerce was, "Outside of your beach and park, what recreation facilities are there for my employees, who will number 900, of whom 250 play golf?" This, as my informant pointed out, "was not so good for the city in question."

A True Tale of Two Cities

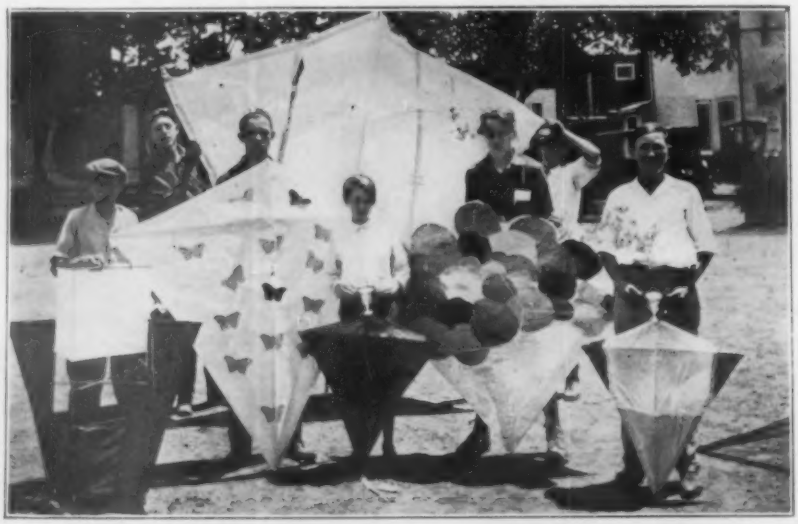
I should like to write a true tale of two cities—about two American towns both bidding for prosperity in terms of new industries and greater population. The cities are in neighboring states. The citizens of one had every reason to believe that a big eastern manufacturer who had been considering several midwestern towns as sites for a new plant was about to select their community. But one day, out of the blue came a bolt of disappointment.

A girls' gymnasium class in Bamberger Park, Dayton, during a lesson hour



This beautiful view is of the No. 12 hole on the Hills course

Canoes and lockers and their users in Island Park



Participants in a kite tournament in McKinley Park

THE VIEWS ABOVE SUGGEST THE VARIETY OF RECREATION FACILITIES WHICH THE CITY OF DAYTON FURNISHES FOR ALL AGES OF CITIZENS

The city had been eliminated. Local business men got together and picked out the president of one of the largest public utilities in the country to find out why.

The answer was quite to the point; a careful investigation by the company's representative had disclosed the fact that the town offered less to its citizenship, young and old, in the way of public recreation than any of the other towns under consideration. The manufacturer's representative had reported that there were no public parks, no municipal bathing facilities, no organized summer and winter recreational activities for the people. It was felt that such a condition would make for discontent and carry too great an element of risk in procuring and holding labor. This severe jolt to the pride and pocketbook of the community aroused local leaders to an appreciation of the value of community recreation, and a movement was at once put on foot to secure a bond issue of $100,000 for municipal recreation facilities at the next election.

Mercifully, I withhold the name of this town. But the one on the other side of the ledger I can boldly disclose. Four years ago the great McCall Publishing Company moved its plant from New York to Dayton, Ohio. At a reception given the principal officers of the company by the townspeople, the President of McCall's was asked this question: "Now just why did you select this city?"

"In answering the question as to why we selected Dayton," replied H. B. Warner, the President, "I can only say that it was the livableness of your city that decided the issue. We found others with plenty of labor, others with adequate shipping facilities, others in which manufacturing conditions were equal with those of Dayton, but nowhere did we find a place where the qualities of living were as highly developed as they were here. Keep Dayton a good place to live in and your future is assured."

And he added: "It is my opinion that the next decade will see a decentralization of industry. There has been a great grouping together of industries in certain centers. Dollars alone are not enough now. Employees deserve and want a more fruitful and cheerful life."

You who are familiar with Dayton know that a part of its "fruitful and cheerful life" is an excellent municipal recreation program. It has 2 municipal golf courses, 52 tennis courts, 27 baseball fields, 14 athletic fields, 19 playgrounds, 13 indoor recreation centers, a bathing beach and a swimming pool. Baseball, volley-ball, playground, soccer, horseshoes, basketball and other league sports are very popular. In addition, band concerts, pageants and other dramatics, holiday celebrations, motion pictures, gardening, art activities, hand-

crafts, athletics for industrial groups, winter sports, hiking clubs, archery and water sports bring entertainment and fun to thousands.

Property Values Increase

Not only does recreation bring economic benefit to industry, but it increases land values. It has long been recognized that parks enhance the desirability of nearby land, thus yielding more taxes to the municipality and boosting the sales value of the property to the owner. This is true because people are willing to pay for sunlight, beauty of surroundings, the opportunity to enjoy wholesome exercise, a sense of space, and contact with things of nature. In the Park Manual recently published by the Playground and Recreation Association and edited by L. H. Weir, several instances of the increase of property values near park lands are cited:

"In 1916 the Board of Park Commissioners in Essex County, N. J., engaged the services of an expert to make a report as to the actual value in dollars and cents of the County Park System. The report was made on four of the Newark parks. The following extract is taken from a summary published in the *Newark Sunday Call*:

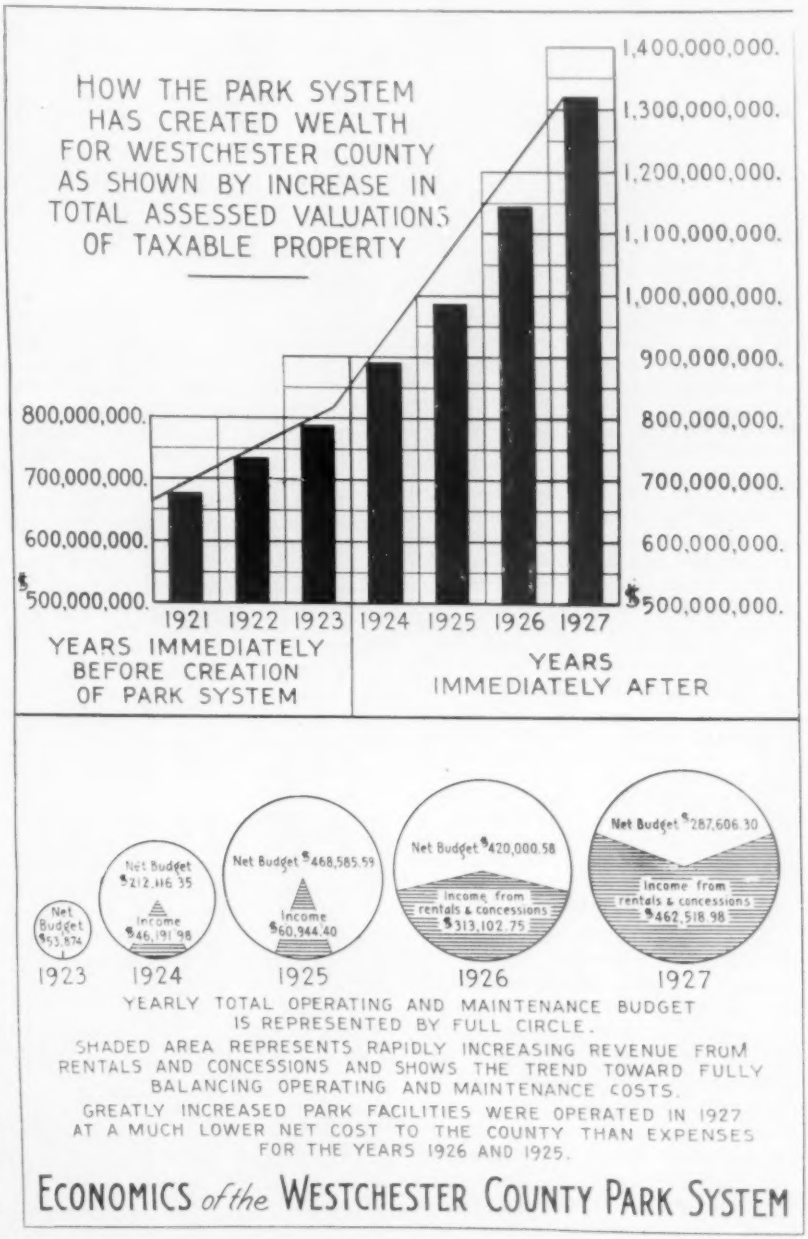
"'The property immediately adjoining the four parks named was assessed in 1905 for $4,143,850 and in 1916 for $29,266,000, an increase of $25,122,150, or 606.3 per cent. At the same time property in the same taxing district, and perhaps not wholly outside of what may be called the park influence, was assessed in 1905 at $36,606,907 and in 1916 at $111,531,725, a gain of $74,924,818, or 204.6 per cent. In plainer words, while the property adjoining the parks has increased more than six times in value, property in the remainder of the same taxing districts has about doubled in value.

"'If the increase in valuations adjoining these parks has been the same as in other property in the same taxing districts, and no more, it would have been $8,453,454, leaving an increase as a result of the parks of $16,668,700. The fortunate owners of this property have been enriched by this large sum beyond what they would have been had the parks not been established.

"'But this is not all. The cost of these parks was $4,241,540. The increase is enough to pay for them four times. The cost of all the parks in the county was $6,929,625.47—say $7,000,000. The increase of property adjoining these four parks alone, beyond what it would have been if the parks had not been constructed, is sufficient to pay for all the parks in the county 2.4 times, and the increase from the other parks in the county, while not so great in proportion, is undoubtedly much more than their cost. The increased revenue to the county is already sufficient to pay the interest and sinking-fund charges on the bonds issued for park construction, and almost the entire cost of the annual maintenance.'"

The city of Montreal is reported by the City Parks Association of Philadelphia to have acquired 164,504 square feet of land, that is, about 3-4/5 acres, at a cost of $82,252. In the center it laid out a small park and bounded it by streets. The area taken up by the park and the surrounding streets was 82,466 square feet, or 1-9/10 acres. The city then sold the remainder of 82,038 square feet for $99,032, reaping a net profit of $16,780.

Recently the directors of the Regional Plan of New York and Its Environs published the results of their study of the effect of park systems and play-


HOW THE PARK SYSTEM HAS CREATED WEALTH FOR WESTCHESTER COUNTY AS SHOWN BY INCREASE IN TOTAL ASSESSED VALUATIONS OF TAXABLE PROPERTY
1,400,000,000.
1,300,000,000.
1,200,000,000.
1,100,000,000.
1,000,000,000.
900,000,000.
800,000,000.
700,000,000.
600,000,000.
$500,000,000.
800,000,000.
700,000,000.
600,000,000.
$500,000,000.
1921 1922 1923 1924 1925 1926 1927
YEARS IMMEDIATELY BEFORE CREATION OF PARK SYSTEM
YEARS IMMEDIATELY AFTER
Net Budget $53,874
Net Budget $212,116.35
Income $46,191.98
Net Budget $468,585.59
Income $60,944.40
Net Budget $420,000.58
Income from rentals & concessions $313,102.75
Net Budget $287,606.30
Income from rentals & concessions $462,518.98
1923
1924
1925
1926
1927
YEARLY TOTAL OPERATING AND MAINTENANCE BUDGET IS REPRESENTED BY FULL CIRCLE.
SHADED AREA REPRESENTS RAPIDLY INCREASING REVENUE FROM RENTALS AND CONCESSIONS AND SHOWS THE TREND TOWARD FULLY BALANCING OPERATING AND MAINTENANCE COSTS.
GREATLY INCREASED PARK FACILITIES WERE OPERATED IN 1927 AT A MUCH LOWER NET COST TO THE COUNTY THAN EXPENSES FOR THE YEARS 1926 AND 1925.
ECONOMICS *of the* WESTCHESTER COUNTY PARK SYSTEM

The Westchester County Park System is financed by the standard form of county bonds running for 41 to 49 years. The enhancement in property values due to the Park System is sufficient to meet the carrying and sinking-fund charges of the bonds. The stimulus of total assessed valuations of the county since the Park System was established is clearly shown by the rate of increase in the years immediately before the establishment of the Park System and in the years immediately following and up to the present.

It is also the policy of the Commission to make the Park System self-supporting as to operating and maintenance expenses, by moderate charges for the use of special facilities such as bath-houses, swimming pools and golf courses. The accompanying chart hows how the income from rentals, concessions and golf courses is rapidly building up to a point where the Park System will be self-supporting. For the year 1928 it was estimated that the receipts from all branches of the park system would reach $726,000, and the Board of Supervisors appropriated an additional amount of $326,000 to meet the difference between receipts and the cost of operating and maintenance expenses. However, the receipts are materially exceeding the estimates, and up to October 1, the Park Commission has taken in from its various concessions, including Playland, the golf course, swimming pools, miscellaneous rentals, etc., more than $1,050,000, so that it is expected that the receipts will almost, if not quite, pay the entire maintenance and operating expenses.

—From an address by Jay Downer, Chief Engineer, Westchester County (N. Y.) Park System, before the Recreation Congress, at Atlantic City last month.

grounds on the values of adjacent property:

"While it is usually admitted that parks increase values, there is a prevalent idea that playgrounds decrease values. An investigation made by the staff of the Regional Plan of New York and Its Environs with regard to the values of land adjacent to seven playgrounds in Manhattan and two in Brooklyn showed that playgrounds do not 'cause any retardation in the natural rise of land values, and in some instances may be responsible for a considerable increase in value.'

"It is evident that a playground's effect upon surrounding land values is dependent upon the use made of that land, the smaller rate of increase in value of real estate around certain playgrounds being plainly in part due to the fact that these were located in business and industrial neighborhoods.

"An outstanding example of the effect of a playground in a wholly residential district is found in the Brownsville section of Brooklyn. Here values in fifteen years have risen 175 per cent on land directly bordering the Betsey Head playground, while values on streets one to three blocks away have increased only 118 per cent. There is little business on these blocks. The whole neighborhood is of a residential character. This playground is also of sufficient size to have more effect on the land values than some of the other playgrounds studied, which are less than an acre in size. Although the figures did not prove it, it is highly probable that a small playground, located in a mixed business and residential neighborhood, has very little effect one way or another on the surrounding properties. On the other hand, a ten-acre playground, such as Betsey Head, gives light and air and a park-like quality to the space which is more beneficial to the neighborhood. This playground is zoned for residence on two sides and on two sides for business."

Testimony from Real Estate Subdividers

Perhaps there is no better proof of the increase in land values than the new movement among real estate subdividers. Encouraged by the pioneering experience of J. C. Nichols of Kansas City and the late William E. Harmon of New York, hundreds of realtors are now setting aside parks, playgrounds, golf courses, and other recreational areas for the permanent use of the purchaser of lots. They have found that they can divide the cost of the space set aside and add it to the asking price of the lots. The added value of the lots returns their money to them and, at the same time, provides a fine sales argument for their property. From many testimonials of leading realtors to the soundness of this policy, I have time to cite but two. A statement of the Mason McDuffie Co., of San Francisco, is as follows:

"It may be of interest to you to know that in laying out St. Francis Wood, a residential subdivision developed by us in San Francisco, we reserved between 8 and 10 per cent of its area of 125 acres for community parks and playgrounds. We are confident that the value of the land devoted to these purposes was fully recovered through the creation of higher values in the home sites of St. Francis Wood."

H. W. Brennan, a large developer at Memphis, wrote:

"I purchased a tract of 256 acres eight miles from the business center of Memphis in direct line of the best class of improvements. I presented approximately 114 acres to the Memphis Park Commission without conditions except that the land was to be used for recreational or other athletic purposes.

"From a real estate standpoint, the proposition before me was: Could I donate over 40 per cent of the original tract to the city and then subdivide and market the remaining portion at prices to yield a net profit on the enterprise? I found that this could be done and that it was good business to have given the city the park area, as the resulting enhancement in value of the remaining portion has been sufficient to adequately compensate me.

"May I suggest, if it has not already occurred to you, that playground and recreational grounds could be obtained without cost by any city where the landowner and the public officials put their heads together to work out an acceptable plan of improvement and basis of cooperation?"

Saving in Reduced Delinquency

This thesis may be carried still further. If it is true that the organized recreation program helps to reduce juvenile delinquency and if adult criminals generally begin their careers as juvenile delinquents—and both these propositions are true—it is obvious that a great saving is made to the community every time a delinquent is reclaimed to wholesome behavior, and every time that the installation of a playground wipes out a bad street-corner gang or a rendezvous of mischief. Various estimates on the average cost of maintaining a boy or girl in a reform school place the figure at from $400 to $600 per year. It does not require an adding machine to demonstrate how big a bill a crowded reformatory presents annually to the state or county.

Numerous communities have benefited financially on Hallowe'en and Fourth of July by having live, well-organized recreation departments. Community celebrations organized by these departments on such days have safeguarded the lives and property of the citizens. Ways have been found of giving youngsters thrills that do not involve hoodlumism and mischief.

"Health Is Wealth"

One might go still further on this theme and, drawing upon the testimony of the medical profession, point out the great economic saving to the individual and community in the prevention of disease and the preservation of bodily vigor and stamina that result from systematic and wholesome recreation. Think of the working time lost by people who, for want of stimulating outdoor play, have lost steadiness of nerves and muscular tone. And that loss has been a loss to industry as well.

When these various economic advantages of recreation to the municipality, the taxpayer and the property owner, industry, and all of us as individuals are fully recognized, our citizens will no longer delay in bringing their programs to the highest standards of efficiency.

And the hundreds of communities which have not yet established organized recreation on a permanent basis will do so, for, as Harland Bartholomew, city planner, has said:

"Parks and playgrounds are fully as essential to the upbuilding of a city as paved streets, lights, transportation lines and public water-supplies. Every progressive community today recognizes this fact and arranges its budget so that these serviceable features may be regularly enlarged and improved as the population of the city increases. A community center crowded with young people enjoying wholesome recreation and social contacts under municipal auspices is a guarantee of better citizenship and something to be proud of. A commodious playground, teeming with youngsters every day of the year, is evidence of a city's greatness quite as impressive as smoking factory chimneys."

Electric Railway Group Cut Fatal Accidents

THE electric railway industry during the past year has reduced its number of fatal accidents to 1 for every 155,000,000 persons carried, Lucius S. Storrs, Managing Director of the American Electric Railway Association, New York City, stated at the recent Public Safety Congress.

This means, Mr. Storrs said, that a total number of passengers equal to about one and one-third times the entire population of the United States is being carried safely, to every single passenger fatally injured. It was his contention, however, that traffic hazards can be further decreased and traffic congestion relieved, by electric railway surface cars operating at a higher speed. The present top speed of such cars in many urban communities is not more than 12 miles per hour, while the average probably ranges somewhere between 8 and 11 miles per hour, Mr. Storrs estimated. He predicted also that many more companies operate at an average speed of 8 miles than at 11.

New York electric railway interests believe that if they could increase the speed to approximately 15 miles per hour, they would have taken a big step toward relieving traffic jams, decreasing street accidents and increasing their revenues, he concluded.

Snow Removal by Machinery in Cities

Preparedness and Organization Most Important to Keep Winter Traffic Moving

A NELSON SNOW LOADER WORKING ON SOFT, LIGHT SNOW

THE work of snow fighting involves three separate problems—drift prevention, plowing, and digging out. Drift prevention is a problem of the open country and at present is being worked out by the use of snow-fences and windbreaks placed to suit the topography and the prevailing snow-bearing winds. Plowing is common to both city and country and its object is to provide a path through the uncompacted snow that will be passable to motor traffic. Digging-out is primarily an urban problem, though frequently required in open country where drifts are too deep or too compact to be successfully attacked by plows. In this case, however, the rotary plows are usually successful in removing the snow from the roadway and pouring it into the adjacent fields.

While for country roads and village streets it is usually sufficient to plow the center of the road, leaving the snow piled along the sides of the road or sometimes pushed into alleys and left to thaw there, city traffic conditions require clear roadways the full width of the street. Here the snow cannot be left piled against the curb, as it forms a serious impediment to business, which is the life of a community. It narrows the street width available for traffic, obstructs or prevents sidewalk deliveries and parking, increases the fire hazard, and is continually scattered again by passing vehicles, making it a fruitful cause of traffic jams and vehicle or personal accidents.

Snow-Removal Organization

For this reason practically every city within the snow-belt is actively developing its snow-fighting forces, improving its organization and requiring machinery to supplement the diminishing supply of manual labor or to perform more work for the same expenditure. This work is usually done in four stages: first, plowing and piling the snow either along the curbs or in the center of the street; second, loading the snow by hand or machine into trucks; third, haulage to the dump; and fourth, dumping into rivers or sewers, or on waste land where it will be no longer a nuisance.

A POWER LOADER WORKING ON FROZEN SNOW

Plows of various designs and high-powered brooms are used for the first step. Hand loading into trucks and wagons is rapidly giving way to the use of far more efficient and economical machine loading. The adoption of the machine loaders as the key to snow removal has shifted the emphasis from the sudden employment, prompt payment and quick discharge of an army of pick and shovel laborers, with the attendant difficulties in their efficient organization and supervision, to the far simpler assembling of a small number of trucks with their ready checking, routing and dispatch. It has become a trucking problem.

Where the work is done directly by the municipality, it uses its own trucks as far as possible, supplementing their number with additional trucks hired with their drivers by the day. Shovel gangs are still used, but in smaller numbers, for crossings and gutters and with the plows.

Use of Loaders

The number of trucks required to serve a loader varies. A long haul to the dump means more trucks, and the speed that the trucks can maintain in traffic must also be considered. Where work is done at night, the trucks can run faster and there will also be less interference with the normal business

traffic. Usually five or six trucks are assigned to a loader, and this number is increased or diminished as the actual results may warrant. It is found better to have an occasional truck waiting for its load than to keep the loader waiting for the trucks. Careful routing of the fleet of trucks through plowed streets and close adherence to schedules are important factors in securing the best results.

For high-speed work on main thoroughfares, a special foreman should be assigned to each loader to direct the truck movements and tally the loads. Two laborers generally work with a loader, one on each side of the feeder, trimming up the edges of the cut and throwing into the feeder such snow as has escaped the swath of the machine. With such a crew and one operator, 8-yard loads have been readily dispatched on 45 seconds headway over periods of several hours in reasonably new snow, but where the snow has thawed and re-frozen, so high a rate cannot be maintained. For side streets and residential districts where the highest speed is not the prime requisite, the foreman and extra laborer are dispensed with and the operator and one laborer work together along the street, cleaning up as they go. One truck-load every two to four minutes is the rate usually developed under these conditions. Where a loader has a traveling speed of 8 miles an hour, it can be economically run out over country roads to dig out drifts that are too deep or too hard for the plows to break through, thus opening important thoroughfares and bus routes at negligible expense.

System in the City Manager's Office

DISCUSSING the question, "To what extent does the manager control the departments operating under him, and how does he keep himself informed of their work and progress?" at the recent annual convention of the International City Managers' Association, C. A. Bingham, Town Manager of Norwood, Mass., offered the following suggestions on office forms, manuals and maps:

"Anything worth doing is worth putting in writing and filing a copy for follow-up and for final record. All memos, complaints, inspections, requests and similar routine papers should be on individual forms of different colors and filed separately. All work-orders should be numbered and all cost-data and routine reports should carry the same number. All time keeping and stock recording should be segregated by job numbers and unit classifications, such as rock excavation separate from earth excavation, etc., in all departmental construction and maintenance. Without all such details, cost accounting becomes a misnomer and useless as a controlling feature in efficient prosecution of work or budget estimating.

Keep the Records Handy

"A small and properly designed job card for weekly costs, to be filed in the right top drawer of the manager's desk, will be found to keep a closer tab on job costs than the weekly budget summary under his glass desk top can give him. The budget record can only touch the high spots on general percentage comparisons of money expended against the yearly prorata. This same drawer should contain all records such as employees' individual history, and merit and demerit cards, monthly or weekly departmental reports, automotive equipment records, insurance cards, etc.

"The daily consolidated police reports, public work sheets, gas or electric records, financial data and kindred information by which a manager keeps in constant touch with the city's activities can best be filed in binders and kept in a revolving bookcase or on a small table adjacent to his desk. The ultimate detail to which these reports are carried will depend on the size of the city and the magnitude of the work in progress. The writer has found that the smaller the city, the greater the detail necessary for the manager's individual attention. Any manager who has had both large and small cities will agree that in the larger and faster-growing cities more may be safely delegated to the type of directors not available in the smaller communities for financial reasons.

Control of Departments

"The line of demarcation between too much personal detail and paper work on one hand and the other extreme of letting the departments run themselves, is absolutely a matter to be gained by experience. While no fixed rule can be laid down, it is wise to err on the side of safety and keep as close a touch, both in the field and in the various department headquarters, as time will permit absence from our desks.

"A good workman is known by his tools, and a manager's executive efficiency should be measured in large part by the ease of access to his controlling records. No under-department can be expected to keep its office ship-shape without a good example being set 'up-stairs.' Just as surely as appearance of policemen, and paving, cleanliness and lighting of streets are visible evidences of efficient departmental operations, so is a neat, systematic office the yardstick for measuring the manager's office.

Purchase Control Vital

"The manager's control of purchase is probably his first line of defense against unnecessary expenditure. Every requisition should receive his personal investigation and approval before the purchasing agent even secures quotations—let alone makes the order. To await the order for his approval means useless preliminary work if he turns it down. Most important is the unbreakable rule that every order must have its total cost incumbered by the auditor in the outstanding order ledger, similar to certifying a check; so that no account can be overdrawn and also that the vendor may know that his pay is reserved. Another absolute requirement should be to see that the receipted copies of orders are promptly returned by department heads when goods are received, for delay in this step means loss of cash discounts. The writer has never seen a purchasing department which cannot pay its entire annual cost on cash discounts alone.

The Board of Directors

"The manager's attitude towards his commission is a vital problem seldom discussed, but it has a bearing on his departmental control. He should never play favorites on the commission; likewise, he should see that every member receives simultaneously a copy of any general departmental letter, special report or proposed regulation, and sufficiently in advance of meetings to give time for careful consideration. He will find it very helpful to write every weekly report in paragraph form, separated as to 'reports for action' and 'reports of progress.' All reports should be kept in a separate binder for each commissioner and indexed to date. He should keep constantly at hand his follow-up and tickler file on matters pending investigations, and requests for departmental special reports, because once he slips behind, he will soon find himself in a helpless state of procrastination and apology.

Manual and Maps

"An administrative manual of practice embodying directions for general routine and specific methods to be followed by the departments will be found most helpful; also, a chronological schedule or 'municipal calendar' on which are marked the special dates on which certain fixed matters are required to be done by each and every department. Such a sailing chart is the most helpful guide a manager can have to insure the carrying-out of the old slogan, 'Do it today.' Likewise, a set of map wings on the wall near his desk should contain maps of sewer, water, gas and electric lines, fire and police signal systems, police beats, zoning areas, accident maps, licensed businesses, epidemic areas, organization charts, municipal property, house numbers, paving, traffic control, cemetery lots, and numerous other matters to which he must continually have access for conferences and answering inquiries."

> We can have exactly the kind of government we want if, with firm resolve, we exert ourselves to get it.
> —General John J. Pershing.

Experience in Construction of a Gunited Steel and Centrifugally Cast Concrete Pipe Line—I

By E. A. ROWE

ENGINEERING OFFICES, J. B. LIPPINCOTT, LOS ANGELES, CALIF.

THE Laguna Beach pipe line has now been in operation for over one year. While this period of time is not adequate to reach definite conclusions as to the merits of the types of pipe used, a recent examination of the entire line made by the engineers in charge of the work showed it to be in excellent condition and indicated that their expectations at the time the line was installed would be justified as time went on. Inasmuch as this pipe line was constructed of pipes heretofore unused in California, it aroused the interest of many water-works men and during construction was visited by many members of the engineering profession.

Laguna Beach is located on the coast of Orange County, Calif., about 35 miles south of Los Angeles harbor. In 1926 it had a permanent population of approximately 1,500. During the summer season the population increases to more than 6,000. The water-supply for this community prior to the installation of the new works was obtained from wells located in the small canyons back of the town. The water from these wells was poor in quality and scant in quantity. As a result of the past group of dry years in Southern California, this source of supply practically failed, and most of the water consumed in the district was brought in, in bottles or tank-wagon.

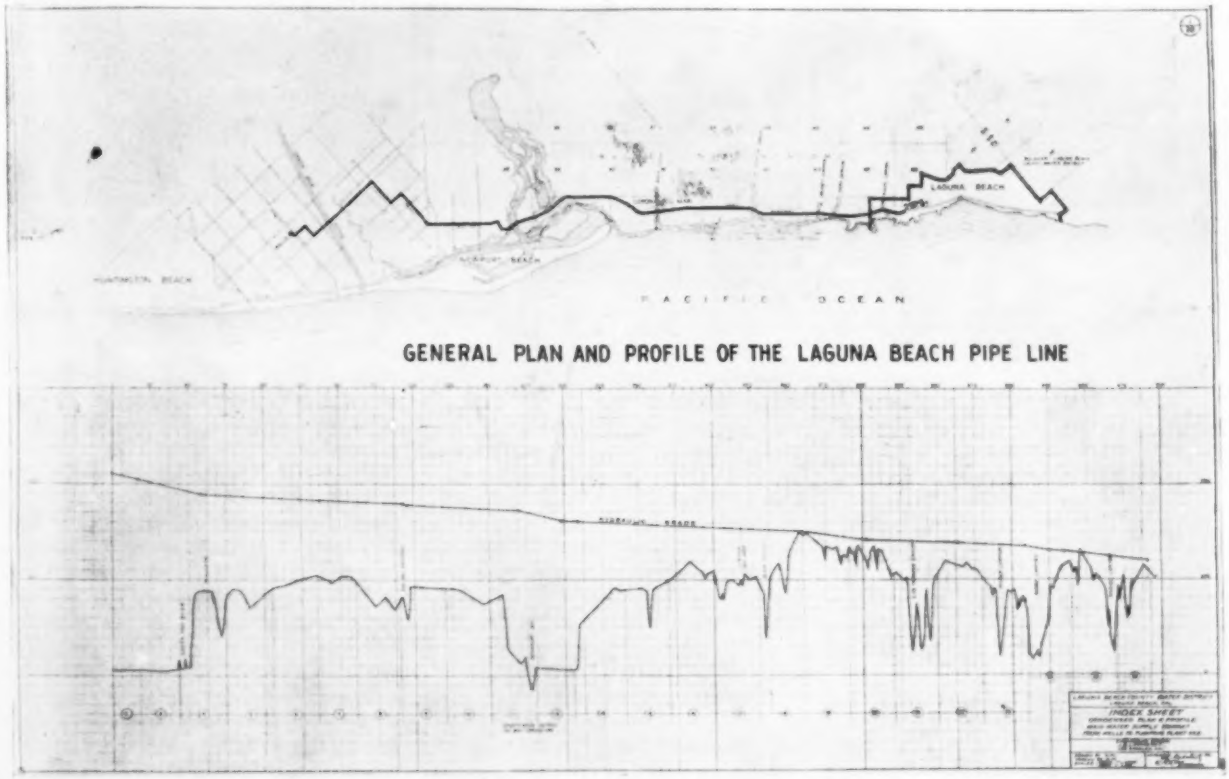
1,450-Acre Water District Votes $600,000 Bond Issue

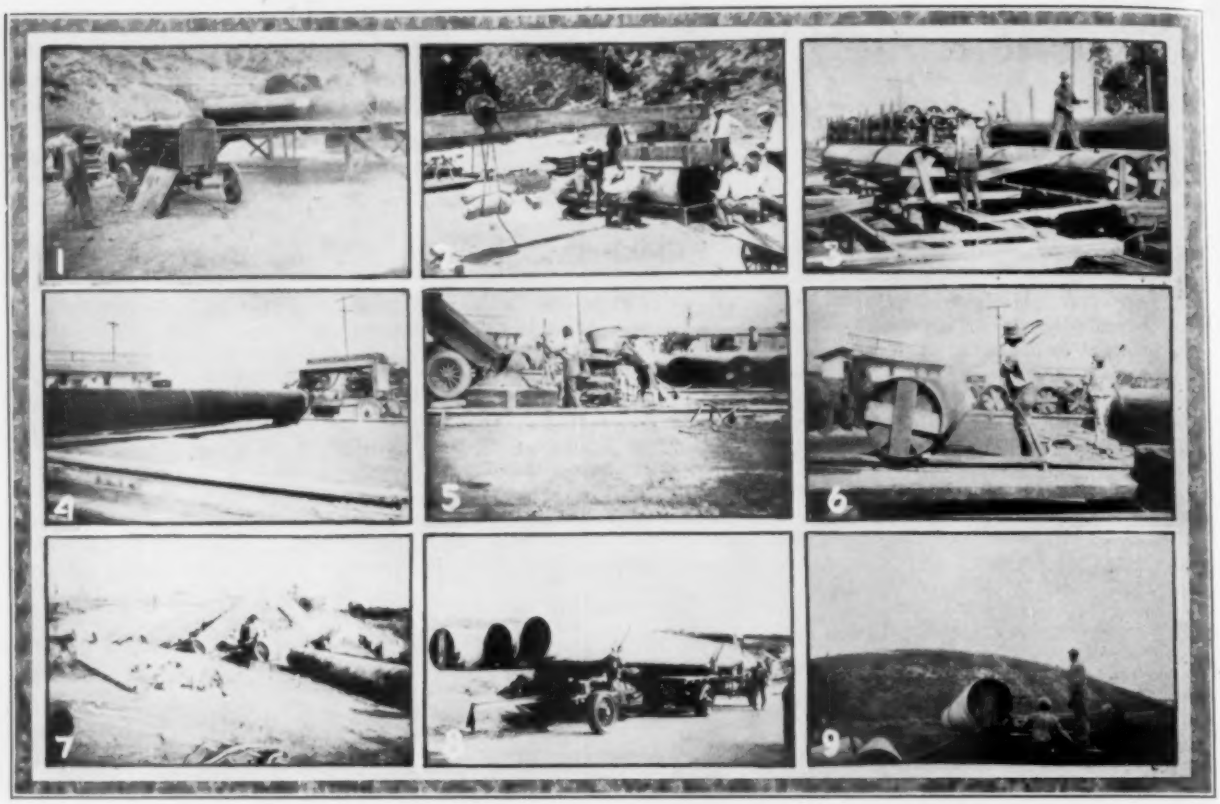
To relieve the situation, a water district was formed under the County Water District Act, and the Engineering Offices of J. B. Lippincott were employed to prepare plans and estimates for bringing in a new water-supply and the construction of an adequate distribution system. It is interesting to know that the election for the organization of the district was unanimous. When the bond election was submitted to the voters it was also unanimous. The total area within the boundaries of the district is approximately 1,450 acres. A bond issue of $600,000 was voted for the construction of the necessary works. This represents a debt of $400 per acre for the lands of the district and at the time of the election approximately $400 per capita.

New Source Located

Investigations showed that the only available source of water-supply was from the ground waters of the coastal plain largely replenished by the Santa Ana River. One hundred and twenty acres of water-bearing land were purchased by the district for the necessary wells. These wells are located about 13 miles northerly up the coast from Laguna Beach. To make this water available for the district, it was necessary to construct a pipe line approximately 70,000 feet in length to the westerly boundary of the district and to install pumping equipment for lifting the water from the wells about 175 feet through this pipe line.

The location and a profile of this line are shown on the accompanying map. Between Newport Bay and the city of Laguna Beach the line parallels the state highway from Los Angeles to San Diego and passes through a strip of unusually attractive coastal lands belonging to the Irvine Company. These lands in the near future will undoubtedly be developed for residential purposes. They had no adequate water-supply immediately





EXPERIMENTAL AND CONSTRUCTION WORK ON THE GUNITED STEEL PIPE

1. Guniting experimental sections of steel pipe. 2. Testing experimental sections of gunited pipe for external load. 3. Steel pipe arriving at yard at Costa Mesa. 4. Reinforcing in place and pipe on tracks in contractor's yard. 5. Delivering mixed sand and cement to the cement gun in the yard. 6. Guniting the pipe in the yard. Note the bracing in the interior of the pipe. 7. Large special angles manufactured and gunited in the yard. 8. Special truck and dolly used in transporting gunited steel pipe to the trench. 9. Unloading pipe at the trench

available. When Mr. Irvine was approached by the Directors of the District to secure the necessary right-of-way for their conduit over these lands he suggested that the pipe line be constructed adequate in size to care for not only the Laguna Beach County Water District but his lands fronting the coast. Mr. Irvine agreed to contribute the cost of the line on the basis of the carrying capacity allotted to him, as well as to furnish the right-of-way free of cost. As such an arrangement would result in a substantial saving to the District, a contract was entered into between the District and the Irvine Company whereby this line was built and a portion of its carrying capacity allotted to the Irvine Company. The company paid over half the cost of the entire line for approximately half the capacity. The company is to develop its own water independent of the Water District for the service of its lands. The operation and maintenance of the line is vested entirely in the Laguna Beach County Water District, the cost thereof to be prorated between the two parties.

Selection of Type of Conduit

The selection of the proper type of conduit was given particular consideration. Economic studies were made for various routes, assuming its construction of practically all the various types of pipe then in use in California. These studies were made by determining the total cost of the line of various sizes and kinds of pipe for a term of years, the cost covering interest, depreciation, maintenance and operation, including pumping expenses. Consideration was given to the length of life of the various kinds of pipe and to their coefficient of friction. The line has a maximum capacity of 15 second-feet for over 75 per cent of its length, reducing to 5 second-feet at its terminus. The controlling elevation is about two-thirds of the distance from the wells, the elevation at this point being approximately 150 feet higher. That portion of the line from the wells to the high point will be a force main subject to water-hammer. From this point the water flows by gravity to a reservoir at its terminus on the westerly side of the Laguna Beach District. Air chambers are to be installed at the pumping-plants so that the maximum head on the force main including water-hammer will be in the neighborhood of 250 feet and the maximum head on the gravity line 125 feet.

The line for practically its entire length passes through sedimentary soils which experience has shown to be particularly severe in their corrosive action on steel pipe. In view of the heavy initial cost of this line every effort was made to secure one that would have a relatively long life as well as adequate strength to withstand the pressures obtaining. The most satisfactory type of pipe to meet these requirements is undoubtedly cast iron. Our estimates showed that the cost of building this line of cast iron, however, was beyond the financial resources of the District. The two types of pipe most generally used in California for such construction is either of steel or reinforced concrete. Both types have their advantages and disadvantages. The steel pipe has adequate strength, but in these sedimentary soils has a relatively short life. Reinforced concrete pipe as manufactured up to the time of the construction of this line had a long life but was lacking in strength. Previous to this time it had not been successfully used on a large scale for heads over 125 feet. Owing to the many steep syphons existing in the gravity portion of the line, the type of joint in general use in reinforced concrete pipe was expected to give trouble. As a result of intensive investigations and experiments, the line was built of electrically welded steel pipe having a protective coating of gunite for the force main and a centrifugally spun reinforced concrete pipe for

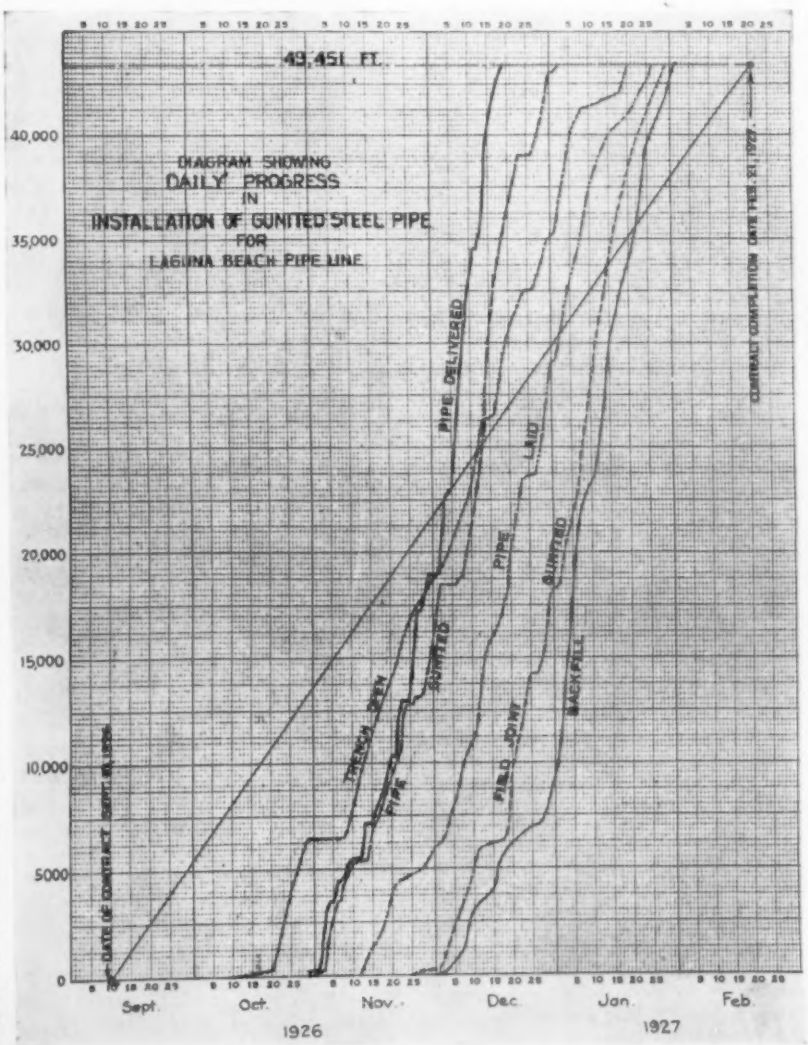
the gravity section. It is believed that the steel pipe with the gunite coating will combine the lasting qualities of the concrete pipe and the strength of the steel pipe. The centrifugally spun reinforced concrete pipe has substantially greater density than the ordinary poured pipe, and the type of joint used is believed to be superior to the methods used in joining the poured pipe.

Investigation of Concrete Covered Steel Pipe

In numerous localities in Southern California steel pipe which had begun to show wear was exposed and a concrete jacket poured around the pipe. While this work has resulted in an increase in its life, it has been expensive. Mr. Lippincott and the writer had long been considering the possibility of protecting steel pipe with gunite. Investigations were made as to the feasibility of protecting the pipe in this manner and it was found that the late J. D. Schuyler, an eminent California engineer, had had the same idea some fifteen years previously. In connection with some work he was doing for the Sweetwater Water Co. in San Diego County he had had some riveted steel pipe coated with gunite and installed in their system. The soil conditions at that point are particularly severe on steel pipe. Through the cooperation of the officials of the Sweetwater Co. we had this line exposed and made an examination of its condition. It was built of 12-inch, 14-gage riveted steel pipe, several thousand feet in length. About 200 feet of the line had been given a protective coating of gunite, the remainder being ordinary dipped pipe. The gunite had been applied in Los Angeles and the pipe shipped by rail to San Diego, where it was installed. The coating was about ½-inch in thickness, reinforced with 1-inch mesh poultry netting. When examined, it was found that the gunite was in excellent condition, free from cracks, and showed no sign of deterioration. An opening was cut through the gunite to expose the steel to determine its condition. The steel was bright and appeared to be as good as it was the day installed. This gunite had been applied over the asphalt dip. We were informed by the officials of the Sweetwater Water Co. that the remainder of the line, which did not have the gunite coating, had depreciated to such an extent after a period of thirteen years that they found it necessary to pour a concrete jacket around it in order to avoid its immediate duplication. Mr. Covert, the engineer of the Sweetwater Water Co., states that if this concrete had not been applied, it would have been necessary to abandon the line in another two years.

Steel Test Pipe Manufactured

The results of this investigation were so encouraging that we felt warranted in carrying out further experiments to determine the feasibility of this pipe for the Laguna Beach line. The Sweetwater pipe confirmed our opinion that the gunite coating could be successfully applied to the pipe before it was laid and would add substantially to its life. We had some apprehension, however, as to the durability of the gunite coating on pipes as large as 30 inches in diameter, particularly under external load and pulsations due to water-hammer. A pipe of this size made of relatively thin steel plates has a tendency to flatten and become elliptical in section when empty, rounding out under water pressure. Through the courtesy of the Western Pipe & Steel Co. of California, sections of electrically welded steel pipe 30 inches in diameter and of varying thicknesses were manufactured for the district for experimental purposes. A yard was provided in Laguna Beach, and these sections of pipe were given various thicknesses of gunite coating, reinforced in various manners. The equipment and labor necessary to carry on these investigations were furnished free of charge by the Cement Gun Construction Co. of California. Mr. Vern Case, of that company, cooperated throughout the experiments with the writer and the other engineers. These experimental sections, after being thoroughly cured, were tested for external load in a machine. The tests were made to determine the deflection the pipe would stand without cracking the gunite, as well as its durability under ordinary conditions of handling, the proper thickness of steel and gunite to be used, the proper type of reinforcing and the most satisfactory mix. The results obtained from this test, while interesting and of value in determining the proper thickness of steel and gunite, were not conclusive as to the external load the pipe could stand, owing to the relatively short sections tested and the methods of loading. They showed that the thickness of the steel plates was of greater importance than the thickness of the gunite coating in order to prevent cracking.



For a 30-inch line it was decided to use 3/16-inch plate with a ¾-inch coating of gunite having a mix of 1 of cement to 5 of sand. This resulted in a 1:3 mix on the pipe. The reinforcing decided upon was a galvanized, electrically welded fabric, 2 x 4-inch mesh of 14-gage wire.

As a further test, a section of 24 feet in length was gunited and buried in a trench with 6 feet of cover. The pipe was later removed and showed practically no cracking. This section was then given rather severe handling without damage to the gunite. The experiments demonstrated the importance of proper curing and the necessity of bracing the pipe in the interior to bring it to a true circle until the gunite had cured, at which time the braces could be removed and the pipe handled without damaging the protective coating. Data were also obtained upon which to base an estimate of the cost of doing this work, and it is interesting to note that the cost as actually determined over the entire job was practically as originally estimated.

Investigation of Concrete Pipe

For the gravity portion of the line, investigations and experiments were made, through the courtesy of the Western Concrete Pipe Co., of centrifugally spun, reinforced concrete pipe. Pipe manufactured by this process has been used to some extent in the East, but to our knowledge none had been installed on the west coast. It had been extensively used in Australia and South Africa. A search was made of all available literature dealing with this pipe, and the Western Concrete Pipe Co. installed apparatus for manufacturing it under the so-called Hume process. Experiments were made at their plant under the direction of the engineers of the District to determine the proper mix, type of reinforcement, and time and rate of spinning. The experimental sections were tested under internal pressure with very satisfactory results, which resulted in specifying this type of pipe for the gravity portion of the line.

Specifications were drawn and bids received which resulted in the award of the general contract for the entire line to the H. W. Rohl Co., of San Francisco. The steel pipe was manufactured by the Steel Pipe & Tank Co., of Berkeley. The gunite coating was applied by the Cement Gun Construction Co. of California, and the reinforced concrete pipe manufactured and laid by the Western Concrete Pipe Co. of Los Angeles.

Construction of Force Main

The steel pipe was manufactured at the factory in sections 32 feet in length. Each section was made up of two plates. The plates were rolled and the longitudinal seam was automatic electric butt welded. These two cylinders, or "cans," were joined by an automatic electric lap weld. The pipe was made of inside and outside courses, the minimum internal diameter being 30 inches. After the pipes had been welded into sections 32 feet in length, they were tested under an internal pressure of 150 pounds per square inch and all leaks or sweats repaired.

After being tested it was pre-heated and vertically dipped with petrolastic pipe dip. The ends of each section were protected so that they were not covered with dip for the last six inches. The pipe was shipped from Berkeley to a yard located at Costa Mesa near Newport Beach, where it was unloaded and all places where the dip had been damaged were repaired. The interior bracing was then placed in the pipe to bring it to a true circle. Three sets of braces were put in each 32-foot section, one in the center and one at each end. The character of this bracing is shown in the accompanying photographs. After the bracing had been installed, the reinforcing fabric was applied to the outside of the pipe. This consisted of 14-gage galvanized electric welded fabric. The roundabout wires were 2-inch centers, and the longitudinal wires 4-inch centers. This fabric had been crimped at the factory so that as it was laid on the pipe it was uniformly held ½-inch from the exterior surface by the crimps.

The contractors had obtained a yard consisting of approximately five acres adjacent to the Southern Pacific Railroad, which paralleled one end of the property. At this yard were located the garage and machine shops of the general contractor and the central plant of the Cement Gun Co. Their plant consisted of a compressor house containing two Ingersoll-Rand permanently mounted 300-cubic-foot air-compressors directly connected to gasoline engines. In addition to the two mounted compressors, the contractor also had available two portable ones. A cement storage house was provided as well as sand bunkers. Cement and sand for the gunite work was mixed dry at a central mixing plant.

Extending from the railroad tracks to the rear of the yard were a number of wooden tracks about 31 feet center to center upon which the pipe was rolled from the cars. All of the yard work was done on these tracks, and the pipe did not leave them until the gunite had been applied and cured. As the plant was operated, pipe was continually being received at one end of the track and delivered to trucks with the gunite coating properly cured from the other end. Drains were provided under the tracks to carry off water from the curing operations. Air lines were also installed throughout the yard for delivering compressed air to the cement guns. After the reinforcing fabric had been applied, the gunite was shot on the pipes. The mix used was one of cement to five of sand. It was found that the rebound on pipe work was considerably more than on flat work, such as buildings or canal and reservoir linings. A 1:5 mix at the gun would give 1:3 on the pipe. A total of 14.4 sacks of cement was used per cubic yard in place. It was the original intention to salvage the rebound and re-use it as sand. Under actual operation, however, the rebound was not re-used. During the progress of the work an analysis was made of the materials required and percentage of rebound for one 32-foot length of pipe, of which 30 lineal feet was gunited, with the following results:

Material put in mixer:	
Cement	7 cu. ft.
Sand	35 cu ft.
Total	42 cu. ft.

After mixing the volume was 38.7 cu. ft. Rebound during shooting was collected on a canvas and when measured was 14.7 cubic feet. Assuming all rebound was sand, then total rebound = 42 per cent of sand measured loose. Net material shot on above assumption—

Cement	7 cu. ft.
Sand	20.3 cu. ft.

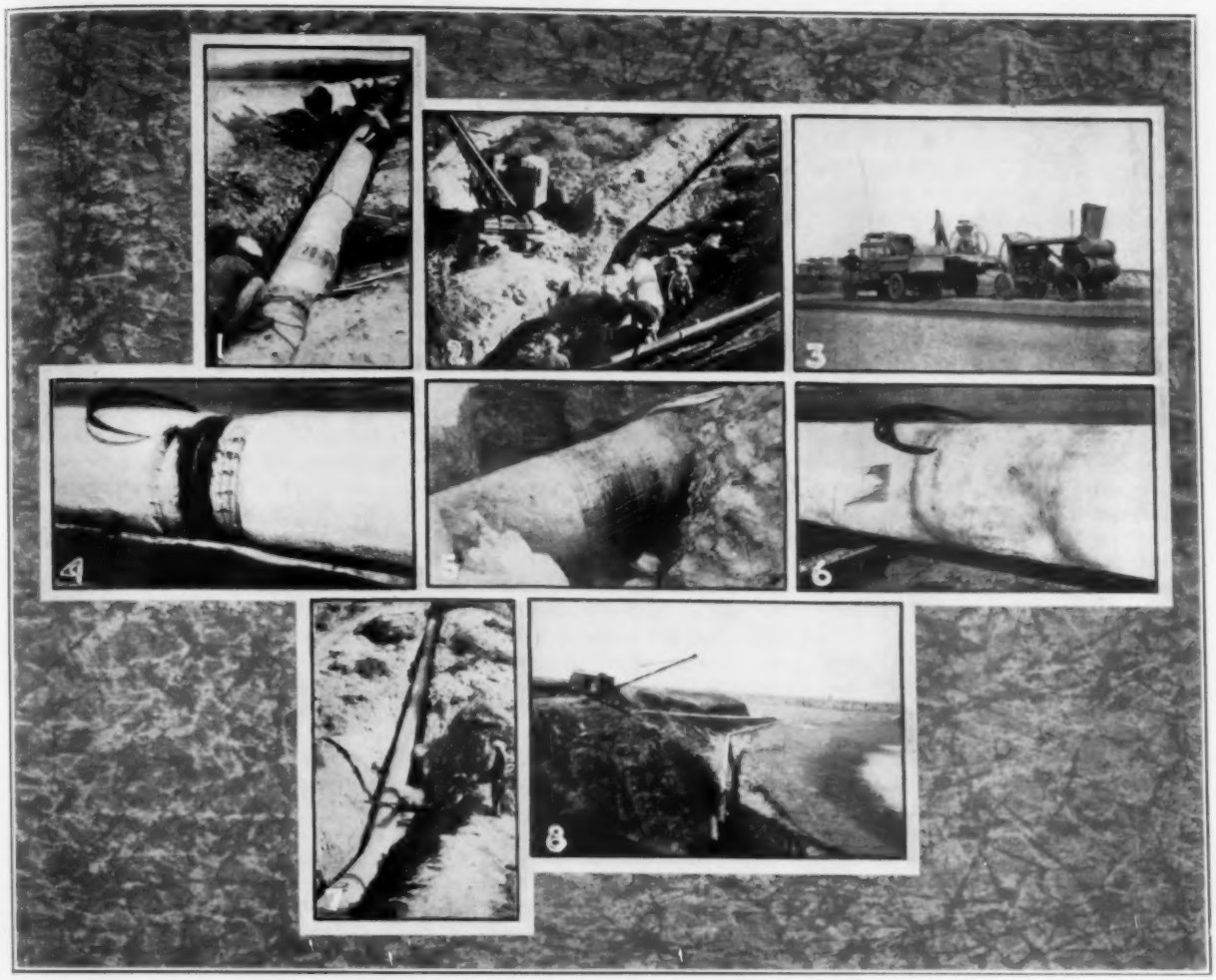
Resulting mix on pipe = 1:3

It was found that the pipes could be rolled, if handled carefully, while the gunite was being applied, without damage. After the pipes had been coated they were rolled to the rear of the track, where they were cured. It was found to be undesirable to attempt any wetting of the gunite for the first two hours after the pipe had been coated, as the water would run down the side, dropping off the bottom, having a tendency to cause the gunite on the bottom of the pipe to slump. After this period it was covered with wet burlap. The burlap was kept wet continuously during the daylight hours as long as the pipe was in the yard. No pipe was allowed to be removed from the yard to the trench until it had been cured for at least ten days, and no pipe was allowed to be removed that could not be laid within 48 hours after delivery to the trench.

A maximum of four cement guns were used. The yard coating extended to within 12 inches of the ends of the pipe, the reinforcing extending 6 inches beyond. All angles more than 5 degrees required for the laying of the line were manufactured and gunited in the yard. These angles were cut from the full-length sections and were in most cases gas-welded together.

Hauling and Laying Pipe

After the pipe had been cured in the yard, it was loaded on a specially designed truck and hauled to the trench side. At the delivery end of the tracks in the yard a ramp was constructed for rolling the pipe onto the trucks. Owing



FIELD WORK ON THE GUNITED STEEL PIPE OF THE LAGUNA BEACH PIPE LINE

1. Laying 30-inch gunited steel pipe in trench. Welder is making a "tack" weld for hinging the pipe over the preceding section for lap welding the field joint. Note manhole for work on interior of pipe. 2. Gunited steel pipe was laid in many rough canyons such as this without damage to the coating. 3. Portable outfit used in guniting field joints. 4. Field joints welded, painted and tested, ready for gunite. 5. Field joint being gunited after reinforcing fabrics have been placed. 6. A completed field joint. 7. A completed syphon of gunited steel pipe ready for sand backfill. 8. Gunited steel pipe laid on piers over bad ground

to the length of the sections, it was necessary to haul them with truck and dolly as shown on accompanying photographs. In order to prevent damage to the gunite coating, the bolsters of the truck and dolly were provided with a rubber seat. Three sections of pipe were carried at a time, and upon delivery at the trench side the pipe was carefully unloaded from the truck and snubbed to the ground on skids.

The pipe was laid in a trench 39 inches in width, in the bottom of which at least 4 inches of either beach or dune sand had been deposited. The pipe was backfilled with this sand to at least the middle diameter. This was specified in order to provide a uniform foundation for the pipe. The steel pipe was joined in the field with an electric lap weld. After a section of the line approximately 800 feet in length had been laid and the field joints welded, the ends were bulkheaded and it was tested for leakage under a pressure of approximately 125 pounds per square inch. All the joints were examined while under pressure, and where any leaks or sweats occurred, they were repaired by either calking or re-welding. After passing this test, the joint was given a priming coat of Oronite, followed by a heavy coat of the Petrolastic pipe dip. Reinforcing mesh was then carried around the joint, lapping that installed in the yard at least 4 inches, and then the entire joint was gunited. The bell holes at the joints were made large enough for the field welding and the field guniting. It was found necessary to have at least 30 inches in clearance all around the pipe at the bell holes. Manholes were provided for the painting of the inside of the pipe at the joints as well as for the installation of air and vacuum valves.

At the point where the line crosses Newport Bay, as shown on the plan and profile, 24-inch flexible cast iron pipe was installed. The method of laying this pipe is shown in the accompanying photographs.

Part of a paper read before the American Water Works Association. To be continued in the December issue.

Where City Planning Should Begin

A PHASE of city planning seldom stressed is its value to small towns. The best place to begin the study and application of city planning principles is in the flag station having a population of seventeen souls. Every town must have a beginning; every town is entitled to dream of a grand future; every town that plans at the start so that nothing fundamental ever will have to be revised and so that its growth is organized, will be, at any stage, a more economically built and administered town, a more comfortable and attractive town, and a pleasanter town than the usual community having no definite aim and no plan to work to.

H. D. SLATER,
Former Chairman, City Plan Commission,
El Paso, Texas.

A Study of Alley Paving

By PERRY A. FELLOWS
CITY ENGINEER, DETROIT, MICH.

THE business of alley paving finds great present activity in Detroit. The city has within its limits alleys aggregating a length of 1,632 miles. Of this, approximately 410 miles has been paved. During the 1927 season 525 alleys, or 62.31 miles, were provided with one-course concrete pavement. It is expected that this year will see as great activity in this line as last.

As the volume of work increases, the necessity for satisfactory design and execution becomes correspondingly greater. The recent changes in alley pavement design in Detroit, and the studies upon which these changes were based, may be of interest to others facing similar problems.

History of Alley Paving

Seventy-eight years ago Detroit started paving alleys. The first effort in this direction, as disclosed by the records, was in 1850. The alley was that one in the block bounded by Bates Street, Randolph Street, Jefferson Avenue and Larned Street, almost in the heart of the present downtown area. This first alley pavement was of cobblestone, and the fashion thus set was followed for forty-five years. A few of these cobblestone alleys remain, and in spite of their age and structure and the increased loads they have to bear, they are in surprisingly good condition.

In 1895 brick was introduced, and its use continued until 1915. During the same period a few scattered alleys were paved with sheet asphalt, asphaltic concrete and creosoted block. The first brick alley on record was located in the block bounded by Griswold, Woodward, Congress and Fort. It is still of service but in need of repaving. Most of the brick alleys have been in use from fifteen to twenty-five years, are still in fair condition and good for several years of service.

Records in the City Engineer's office show that in the downtown district most of the alley pavements now in existence were constructed of brick on concrete base, with sand cushion between. Very few of these alleys are paved with concrete, because all these pavements were laid previous to 1915, the date of the introduction of concrete as an alley paving type.

Present Standards

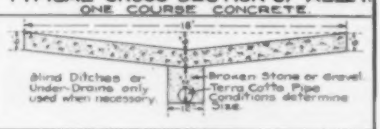
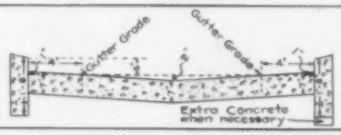
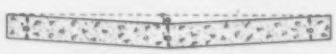
Concrete has displaced all the other kinds of alley pavement during recent years. It has done this principally on the basis of cost. At the present time concrete alleys are costing about $2.12 per square yard complete, and a brick-surfaced alley would cost nearly double that price on the basis of Detroit conditions.

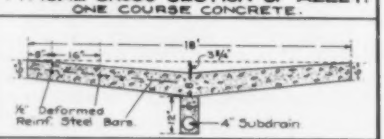
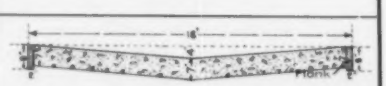
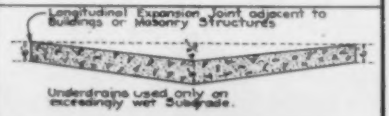
Recent requests to repave certain downtown alleys where the old surfacing constructed a number of years ago has outlived its usefulness, led us to question whether the standard alley paving design which was being followed was of sufficient thickness to withstand the added weight of modern vehicles.

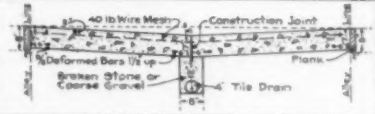
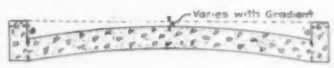
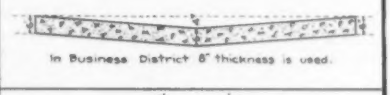
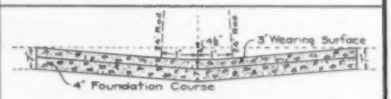
For a number of years the standard alley cross-section for one-course concrete has been 7 inches in thickness at the center and 5 inches at the edges, or an average of 6 inches throughout. In 1914 the use of drain tile in a cinder-filled trench along the center line of alleys was introduced for the purpose of carrying off surface water and rain water during construction, as an aid to the contractor.

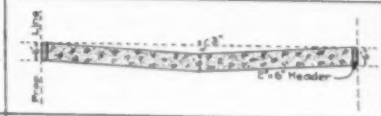
Investigations of Alley Construction

In order to have first-hand information as to the actual condition of concrete alley pavements in the city of De-

CITY	TYPICAL CROSS-SECTION OF ALLEY. ONE COURSE CONCRETE.
BALTIMORE, MD.	 18' Blind Ditches or Under-Drains only used when necessary. Broken Stone or gravel. Terra Cotta Pipe Conditions determine Size.
BOSTON, MASS.	
BUFFALO, N.Y.	NO STANDARD DESIGN. Adverse to Center Gutters Cross-section with Curb and Gutter invariably designed. Under-drains used according to local conditions
CHICAGO, ILL.	
CINCINNATI, O.	
CLEVELAND, O.	NO STANDARD DESIGN. Brick on concrete Foundation mostly used. Under-drains are not used.

CITY	TYPICAL CROSS-SECTION OF ALLEY. ONE COURSE CONCRETE.
COLUMBUS, O.	
DENVER, COLO.	
DETROIT, MICH.	
INDIANAPOLIS, IND.	
KANSAS CITY, MO.	
MILWAUKEE, WIS.	 Longitudinal Expansion Joint adjacent to Buildings or Masonry Structures Underdrains used only on exceedingly wet Subgrade.

CITY	TYPICAL CROSS-SECTION OF ALLEY. ONE COURSE CONCRETE.
MINNEAPOLIS, MINN.	
OAKLAND, CAL.	
ROCHESTER, N.Y.	
SAN FRANCISCO, CAL.	
SEATTLE, WASH.	
ST. LOUIS, MO.	

CITY	TYPICAL CROSS-SECTION OF ALLEY. ONE COURSE CONCRETE.
WASHINGTON, D.C.	
PORTLAND, ORE.	
LOS ANGELES, CAL.	
NEW ORLEANS, LA.	

troit, a group of alleys laid during 1926 was selected for detailed investigation by the Bureau of Tests. This survey consisted in a close examination of the alley pavement surface, noting its condition. The information thus obtained was tabulated section by section, so that the various weak spots might be easily detected and classified. In all, 122 alleys were examined. These alleys were divided into 2,834 stones, each of which was carefully inspected. The designation "stone" is given to a section of the alley pavement between transverse expansion joints, spaced usually about 30 feet apart.

In 41 alleys of the 122 alleys examined, 25 to 50 per cent of the stones were cracked, and in 10 alleys more than 50 per cent of the stones were cracked. These cracks, totaling 646, may be grouped into three classes—transverse cracks, longitudinal cracks, and corner breaks.

In nearly all cases the transverse and longitudinal cracks divided the stone into two pieces, each piece large enough to prevent displacement under traffic. These cracks are in reality equivalent to additional expansion joints without the filler and may be taken care of by filling with tar or asphalt to reduce crumbling at the edges. The corner cracks or breaks at the edges of the pavement are by far the most serious, on account of the displacement of the broken sections, causing holes to form, with progressive breaking-down of the edges. Approximately 20 per cent of the cracked stones had corner breaks.

In addition to the cracking mentioned, the survey showed slight chipping or spalling at 60 per cent of the joints due to the joint filler's being set below the surface; a defect that can easily be remedied by the inspector on the job.

Alley Design Altered

From the result of our present investigations we are convinced that most of the corner breaks can be eliminated and a substantial reduction made in the expansion cracks by increasing the cross-section to a uniform thickness of 7 inches. This will increase the average thickness only one inch but at the same time will add 2 inches at the critical point along the edges where it is most needed.

Tile Drains Eliminated as Useless Expense

Recent investigations led to the conclusion that the drain tile is generally a useless expense under Detroit conditions. Practically no ground water is in evidence at the depth at which an alley is ordinarily graded; on account of local sewers and house drains, rain water seeps away rapidly after a shower. Modern methods and high-speed paving equipment result in the work's being done more quickly than in other years, so that jobs are not held up by wet weather, as formerly was the case.

With these considerations in mind, the use of tile drains was eliminated from the 1928 specifications, thereby counteracting to some extent the cost of the extra inch of concrete. It was estimated that the added cost for the 7-inch pavement, allowing for the credit on tile, would be 25 to 30 cents per square yard higher than last year's figures. Results of the first bids of the season, however, based on the new specifications, indicate that the excess cost will not be much and at the present rate of fall, the new prices may yet equal last year's prices.

One contractor, with twelve alleys left over from last year's list, asked for and received permission to build the twelve alleys under the new specifications at the old prices.

Costs of Paving Alleys Increased Slightly Over 1927

The average cost of alleys last year (1927) was $2.04 per square yard. First bids opened this season (1928), on April 20, averaged $2.24; second bids, on April 27, averaged $2.20; May 4, averaged $2.12; and May 11, averaged $2.11 per square yard. With these facts before us, the following values may be said to be established:

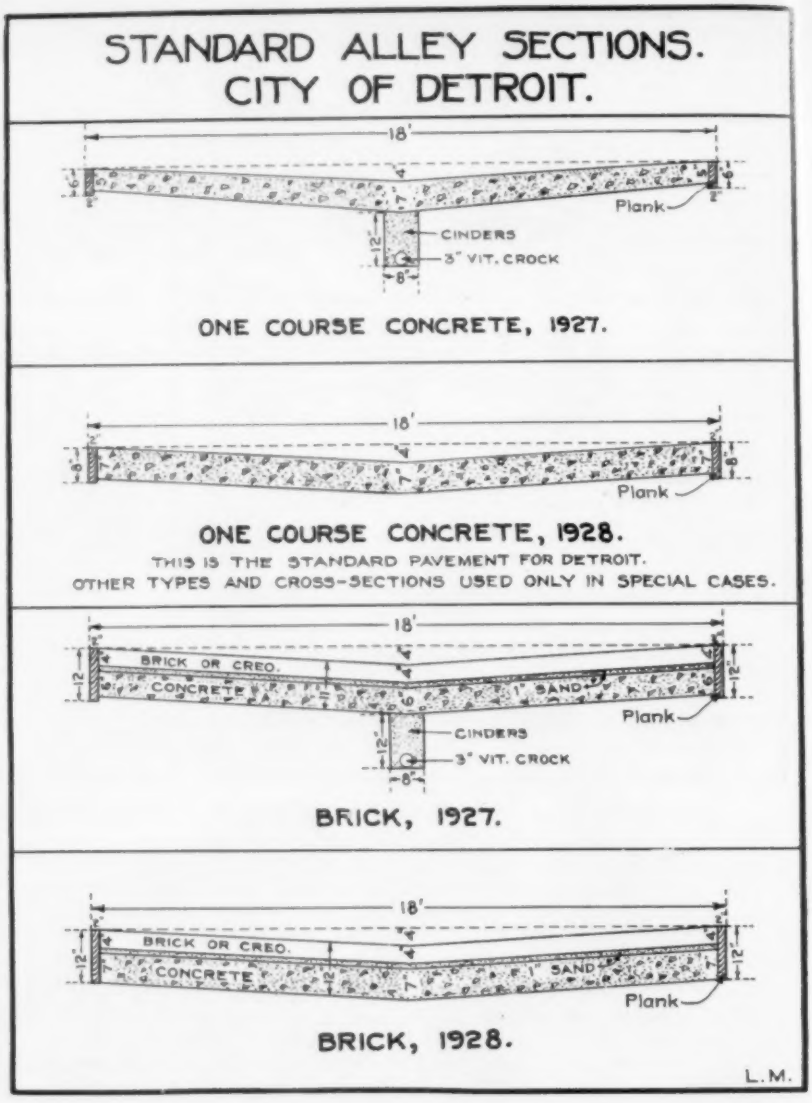
An increase in average thickness of pavement of 16⅔ per cent, an average increase in slab strength of pavement of 36 per cent, and an increase of slab strength at the edge of 96 per cent; with an increase in cost of not more than 10 per cent, and a likelihood of its

being only 5 per cent over last year's prices.

Practice in Other Cities

After the decision to make the changes in specifications had been agreed upon, we were interested in knowing what the practice was in other cities in this regard, so questionnaires were sent to a number of representative cities in the United States, asking for information relative to the cross-sections specified. Replies were received from 21 cities, namely, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Denver, Indianapolis, Kansas City, Milwaukee, Minneapolis, Oakland, Rochester, San Francisco, Seattle, St. Louis, Washington, Portland, Ore., Los Angeles and New Orleans. An analysis shows that all but one of the cities specify a dished crown similar to Detroit practice; seventeen of the cities use a cross-section without drain tile; eight cities specify a thickness of 6 inches; nine cities specify a thickness of 7 inches; two specify a thickness of 8 inches; one did not specify any definite thickness, but stated the thickness was varied to suit local conditions; and another stated that in business districts 8 inches was the standard. Only three of the cities reported using any reinforcement in their alley pavements; one using wire mesh; one using ½-inch deformed bars; and one using a combination of mesh and ⅝-inch deformed bars.

In 18 of the cities, one-course concrete is standard practice; one other city uses two-course concrete; and one uses a 6-inch concrete base with a wearing surface of brick or asphaltic material.



Wheel Tax Prevails in Illinois Cities

A RECENT survey by the Illinois Municipal League of 60 cities in that state shows that 47 of them now have in effect a wheel tax, which in the majority of instances is apparently satisfactory.

With but two or three exceptions, however, the cities replying favor the municipality's receiving a portion (at least 25 per cent of the amount collected in the city) of the gasoline tax, if such a tax, now in force in other states, should be adopted in Illinois. In fact, the League was advised by many cities that they would like to have their share of the gasoline tax in addition to the wheel tax returns.

Wheel taxes have been repealed in the past in 10 of the cities reporting, but such an ordinance has been reenacted in 6 of this group. Public sentiment in most of the 60 municipalities was recorded as favorable to the wheel tax. In a number of cases, however, it was stated that the public, although not actively opposing the tax, has accepted it begrudgingly and as a necessary evil. Public opinion was termed decidedly opposed to the tax in about a half-dozen communities, and Springfield replied that when such an ordinance was submitted to the people a number of years ago, it was overwhelmingly defeated. That city does not have a wheel tax today, but instead maintains its streets from a street and bridge fund. Residents of a few of the places answering, were said to be especially concerned over whether or not the wheel tax moneys actually were being spent on the streets.

Five cities replied that their wheel tax ordinances have at one time or another been contested. Chicago declared that a contest over its tax had been conducted in the courts and the ordinance upheld, but gave no details. Jacksonville made a similar assertion without elaboration, as did Lincoln. Metropolis, a city of 5,500, answering in the affirmative also, stated that the residents there once refused to pay the tax. It was protested by petition in Ottawa at one time, but this was not held sufficient cause to abandon the tax.

Cities not having a wheel tax declared that their roads are maintained by such methods as a general fund, street and alley fund, general tax, and road and bridge fund. Few replying in that vein, however, said that their roads are as well maintained as they believe they should be.

Rate schedules quoted in several instances vary considerably and the annual amount produced by the wheel tax runs all the way from $2,000 to $5,000 in the smaller communities to as high as $4,237,431.85 in Chicago in 1926.

A few of the Illinois municipalities have had a wheel tax for nearly twenty years. Chicago reporting adoption in 1908 and amendment in 1909. River Forest and Wheaton adopted their wheel tax ordinances in 1909, and Moline and Collinsville in 1910. Three or four other cities had such a tax as early as 1914 and 1915, the reports showed, but it did not become general in that state until between 1917 and 1923, with a large proportion of places giving 1927 and 1928 as years of adoption.

Sewage Treatment Works of the Activated Sludge Type for Elyria, Ohio

By GEORGE B. GASCOIGNE
CONSULTING SANITARY ENGINEER

THE city of Elyria, Ohio, situated about 30 miles west of Cleveland, is constructing a sewage works of the activated sludge type, the first plant of its kind to be built in the state of Ohio. Some characteristics of the method of treatment, particularly as applies to the preliminary treatment of the sewage and to the digestion of the sludge, are departures from the usual practice in this country and for this reason are described somewhat in detail.

Sewerage Program

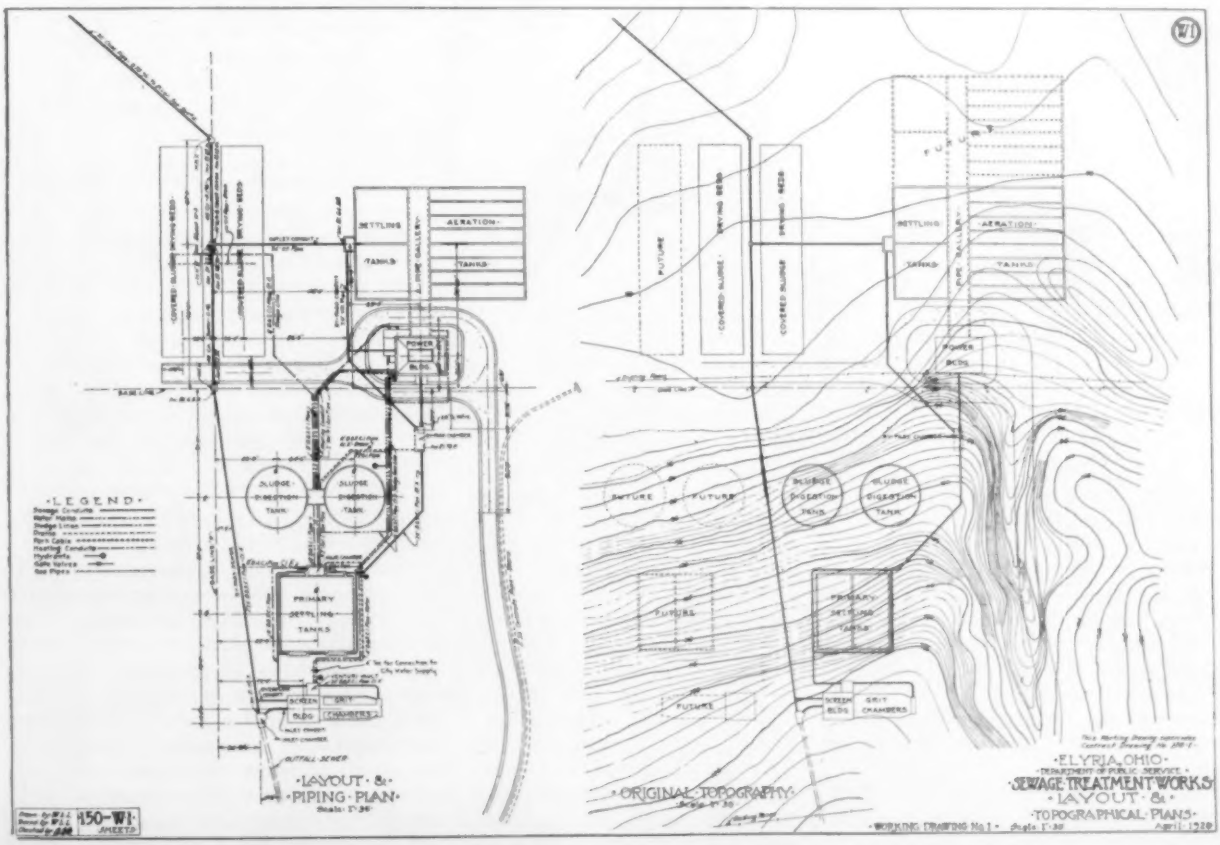
The sewage treatment works for Elyria is part of a major sewerage program which involves collecting all of the sewage of the city and treating it at a site located in the Black River Valley about 1¼ miles north of the city limits. This program has in view eliminating objectionable conditions caused by the discharge of sewage, industrial wastes and polluted storm water in and along the Black River, which flows through the city, and preventing such conditions at the place where the collected sewage would be discharged. In view of the fact that no suitable site was available to provide the necessary isolation for other than a plant in which odor nuisances could be reduced to a minimum, the activated sludge process was selected as being the type most adaptable to satisfy the local conditions.

Ultimate Aim in Sewage Treatment

Today the producing of a clear and stable liquid from crude sewage can be accomplished with certainty and with less difficulty than was the case some fifteen years ago. In practice, successive steps in the treatment are made, the degree of purification depending upon the requirements. The progressive stages of treatment processes may be divided as follows: preparatory, partial, colloidal, oxidational, and germicidal. While in certain instances considerably the most weight is given to simply producing a clear and attractive liquid, the fact remains that the problem of properly disposing of the solids of sewage, or sludge, in a sanitary and economical manner, is, as it always has been, most pressing. Consequently, sewage works designed with especial attention to producing a minimum of inoffensive low-moisture sludge, thus reducing the quantity to be handled in final disposal, will be considered most favorably.

Degree of Purification Required

Sewage works as planned today are



LAYOUT AND ORIGINAL TOPOGRAPHY OF ELYRIA, OHIO, SEWAGE TREATMENT WORKS

usually sufficiently flexible to obtain any desired degree of purification. Seasonal fluctuations and local conditions usually determine the degree required, which in practice is usually accomplished by operating a plant either in whole or in part. Possibly the same result will be attained in the future by giving a portion of the sewage full treatment while another portion receives treatment only to a minor extent. As planned at present, the Elyria works are laid out to provide preparatory, partial, and colloidal treatment during the entire twelve months of the year. However, during the summer season the treatment will be intensified to include oxidation. These degrees of purification may be stated as 65 and 95 per cent respectively, based on removal of biochemical oxygen demand. It can be seen readily, therefore, that it is essential to build sewage works so as to provide for the maximum or highest requirements, which usually exist in the summer time when putrefactive decomposition is hastened by high temperatures, and when the waters in the rivers are low and of not much assistance in oxidizing or stabilizing the objectionable sewage substances.

Capacity of Works and Character of Sewage

The various treatment devices of the Elyria sewage works have been designed upon the basis of serving a population of 36,000 persons. It is estimated that when the plant is first placed in operation approximately 25,000 persons will be tributary. The plant as built is expected to be adequate for the next twelve to fifteen years' growth of the city of Elyria.

Observation and investigation indicate that the sewage will be in a fresh condition most of the time and of average strength when it reaches the treatment plant. Pickling liquors may be admitted to the sewage uniformly and in relatively small quantities. Other industrial wastes are negligible in amount.

Buildings and Devices Necessary for Complete Treatment

The treatment plant comprises bar gratings, grit chambers, venturi meters, primary settling tanks, aerating tanks, sludge settling tanks, power building, sludge digestion tanks, sludge drying beds and the necessary appurtenances. All these devices are necessary to provide complete treatment, and especially when it is considered necessary to dispose of the sludge properly. Each of these devices is described briefly, first as they pertain to treating the liquid portion of the sewage, and secondly, as they pertain to the conditioning and disposal of the sludge.

Treating the Liquid Portion of the Sewage

Bar Gratings and Grit Chambers.—On arrival at the plant the sewage first passes through bar gratings with 1½-inch clear openings, which are cleaned by hand raking. It then passes through one or both of two grit chambers, where the mineral material, such as the sand and cinders which enter a combined sewer from the streets, is deposited during a retention period of about one minute. The grit is removed by hand shoveling and will be used for filling in or grading purposes about the site. The screenings will be disposed of by burial in dug pits. The screening and grit removal constitute what has been called the preparatory treatment.

From the grit chamber the sewage passes through a venturi meter which indicates and records the rate and volume of flow.

Primary Settling Tanks.—For the purpose of smoothing out the variations in the sewage flow, minimizing the effect of industrial wastes upon the character of the sewage, reducing the air required in the oxidation treatment, reducing the volume of wet sludge that must be disposed of, and providing partial treatment during certain periods of the year, the measured sewage will flow through one or both of two Imhoff tanks. There the settleable solids are removed during a retention period of 60 or 30 minutes, depending upon whether or not the tanks are operated in series or in parallel. These tanks have a water depth of about 27 feet and are provided with gas collection equipment.

Aerating Tanks.—After the sewage is settled, and for the purpose of oxidizing either completely or partially the organic matter in solution, or in those finer solids which do not settle naturally, the sewage will flow to and through four aerating tanks of the spiral-flow type with provision for mechanical agitation should it be desired at some later time. At the entrance to these tanks the incoming sewage is mixed with settled matter from sewage previously aerated in the form of a chocolate-colored, spongy and fluffy substance, high in moisture content, highly charged with living organisms, and known as activated sludge. Air is fed into the bottoms of the aerating tanks through porous silica plates which diffuse and distribute it upwards through the tank in fine bubbles, giving the tank surface the appearance of boiling. This boiling continues as the mixture of sewage and sludge passes through the tank. The success of the process depends upon bringing the fluffy or sponge-like sludge into intimate contact with the suspended matter of the sewage. The agitation of the sewage with the sludge for a period of several hours prepares the mixture for settling. The period of agitation is such as to bring about colloidal or oxidation treatment, according as more or less air is used. The final effluent in either case is clear.

The aerating tanks are 160 feet long and 10 feet wide, and have a liquid depth of 15 feet. They are designed for a sludge return of 20 per cent, and the aeration period for oxidation treatment is 4 hours. Filtros plates with a ratio of plate to liquid surface of 1 to 10 are used with an Armco metal type of container. Deflectors of this material are also used. Air is furnished by two electrically driven compressors of the centrifugal type with capacities of 2,000 cubic feet per minute each. The air is to be filtered and measured with the necessary registering and indicating equipment.

Sludge Settling Tanks.—From the aerating tanks the aerated sewage and sludge pass to two sludge settling tanks, where it is retained two hours, based on an average flow with 20 per cent sludge returned and 100 per cent displacement. There the sludge settles rapidly, leaving a clear and sparkling liquid, which will pass through a short outfall sewer to the Black River. Part of the sludge deposited in these tanks is returned to be mixed with the incoming sewage, and part is pumped to either the Imhoff or the digestion tanks for digestion and reduction in volume.

The settling tanks are 45 feet square, with a water depth of 12 feet. They are provided with Dorr equipment for removal of the sludge.

Treating the Solids of the Sewage

As in other present-day processes of sewage treatment, the disposal of the sludge or the deposited solids constitutes a real problem. The activated sludge process produces a sludge the dried solids of which are higher in manurial value than in any other process, but the unit quantities of the sludge to be disposed of, on account of the high moisture content are greatly in excess of those produced in other processes. In order to handle the sludge from this process it is necessary to reduce its moisture content greatly.

At Elyria, the excess activated sludge ordinarily will be mixed with the incoming raw sewage and settled in the Imhoff tanks. The resulting partially digested mixed sludge will be drawn by gravity from the Imhoff tanks and completely digested in heated separate digestion tanks. Provisions are made, however, to secure flexibility as to combinations of sludge, points of entry to the various tanks, withdrawal of supernatant liquid, and the like.

The pre-settling of the sewage prior to activation and the digestion of the excess activated sludge mixed with the sludge from the pre-settling tanks, have placed the sludge-disposal problem for this particular type of plant upon an attractive basis. In fact, such a procedure appears to be the only practical answer to the sludge problem for a relatively small works of the activated sludge process.

Putting into effect these ideas at the Elyria works involves handling three types of sludge—fresh or partially digested, activated, and digested. The extent of the problem may be judged by the fact that, generally speaking, there will be produced about 12,000 gallons of activated sludge for each million gallons of sewage treated. The digested sludge, estimated at 92 per cent moisture, will amount to approximately 1,000 gallons per million gallons of sewage treated.

The primary digestion will occur in the bottoms of the two-story settling tanks, the combined sludge capacity of which is roughly one cubic foot per capita.

Sludge Digestion Tanks.—The sludge from the Imhoff tanks will flow by gravity through the necessary piping to the digestion tanks. The excess sludge from the settling tanks following activation will flow by gravity to a sump in the basement of the power building, from which it can be pumped either direct to the digestion tanks or into the digestion compartment of the primary settling tanks.

There are two digestion tanks 50 feet in diameter with a side water depth of 20 feet. Their capacity has been based upon a 60-day period of digestion with heating for maintaining temperatures at 25 degrees Centigrade. These tanks are trapped for gas collection by means of a floating cover. The gas will be used for heating and lighting purposes about the works and for the maintenance of optimum temperatures for the digestion of the sludge.

Sludge Drying Beds.—After the sludge has been digested, it will be removed by gravity to sludge drying beds which are covered with glass as in ordinary greenhouse construction. These beds are eight in number, each 17 feet wide and 87 feet in length. The filtering material consists of 12 inches of sand overlying 2 inches of gravel. At least fifteen dryings of sludge are expected each year. The design of the beds is based upon serving three persons for each square foot of drying area. The dried sludge will be removed by hand into a bucket carrier which operates on a monorail system. By this means it will then be conveyed to a loading platform, from which it will be hauled away by farmers or to a dump upon the site of the work. It is estimated that about 1½ cubic yards of dried sludge for each million gallons of sewage treated must be disposed of in this manner.

Cost of Construction and Operation

The construction bids upon this work were obtained in December, 1927, and Bierd, Lydon and Grandpre, of Chicago were successful in obtaining the work at a price of $394,381.31. In November, 1928, the work is 40 per cent completed, and it is anticipated that the plant will be placed in continuous operation by July 1, 1929. Taking into account some contingencies which may or may not occur, it would appear that the sewage works can be completed at a total cost of $400,000 exclusive of the land. In order to provide properly for the operation of the plant, which is estimated to cost $25,000 a year, consideration is being given to make use of the sewer rental law. This would involve an annual charge of about $5 for each sewer connection tributary to the treatment plant.

The sewerage program of Elyria is being carried out under the general direction of James A. Hewitt, Mayor, J. N. Eidt, Director of Public Service and Safety, and J. M. Powell, City Engineer. Jasper W. Avery is the resident engineer upon the work, with A. A. Burger in immediate charge.

A Small Town Salvages Worn Macadam Streets

MAIN Street, Union City, Tenn., in 1922 was in a badly worn condition and full of chuckholes. The entire surface was irregular, so far as fitting the existing gutters was concerned. The street was originally constructed of Camden gravel, which carries an average of 20 per cent clay, the balance being a cherty stone. The street showed an average thickness of 7 inches of compacted gravel before it was scarified.

In preparing the street for resurfacing, it was closed to traffic one block at a time and thoroughly washed with a fire-hose until clean of all foreign matter. When dry, it was scarified, care being taken that the teeth of the scarifier dug below the bottom of the holes in the street. After it was thoroughly loosened, the road was shaped with a grader until the proper crown and contour had been obtained.

Following this, it was rolled until compacted, and the whole area was gone over by hand with shovels, to remove all irregularities. Great care was taken to secure a uniform surface. It was then sprinkled, again rolled, and allowed to dry.

On this prepared base the new Kyrock rock-wearing asphalt surface was laid to a depth of 1½ inches under compaction. No paint coat was used on this work. This resurfacing was laid in the spring of 1923, and according to reports is smooth and shows no signs of wear today.

MAIN STREET, UNION CITY, TENN., AFTER RESURFACING WITH ROCK ASPHALT

"What a man does for himself dies with him; what he does for his community lives forever."

VIEW ALONG TWO PARTS OF THE CENTRAL PARKWAY, CINCINNATI, OHIO

Cincinnati's Central Parkway Brilliantly Lighted

By FRANK L. RASCHIG

CHIEF ENGINEER, BOARD OF RAPID TRANSIT COMMISSIONERS, CINCINNATI, OHIO

DURING the last five years Cincinnati has seen great progress. New buildings, broader and well-paved boulevards, new homes, better living conditions—all are a part of her advancement.

One outstanding part of this march of progress is the rapid transit system and the Central Parkway that is included in the entire scheme, all designed and being built by the Board of Rapid Transit Commissioners of the city of Cincinnati. The magnitude and importance of this undertaking can be realized when such men as E. W. Edwards, President of the Edwards Manufacturing Co.; Philip O. Geier, President of the Cincinnati Milling Machine Co.; B. H. Kroger, President of the Kroger Grocery & Baking Co.; Christian Schott, President of the Cincinnati Galvanizing Co.; and Richard Greninger, Editor of the *Cincinnati Freie Presse*, devote their time and attention as members of the Board.

The rapid transit system is to provide for the rapid transfer of passengers from congested districts to their homes. This will be done by a subway in the congested district, becoming a line in the open on private right-of-way on the remainder of the system. The whole scheme embraces the congested districts and a large part of the residential and industrial sections. The subway section, which utilized the bed of the old Miami and Erie Canal, has been completed; and the designers of the rapid transit had vision and used the top of their subway for a wide and beautiful boulevard, passing through the heart of the city. This boulevard, known as Central Parkway, is the main traffic artery in Cincinnati. The first portion, Broadway to Brighton, has just been finished and opened to traffic.

THE OLD CANAL THAT OCCUPIED THE SITE OF THE PARKWAY

Since this traffic artery is of great importance, the Board of Rapid Transit Commissioners took particular interest in the design and equipment to be used on it. W. O. Kleine, former City Electrician, was retained as consulting illuminating engineer to assist in laying out the street-lighting and traffic-control system. The scheme consists, in the main, of three sections: the congested or White Way district; the industrial district; and the thoroughfare district. Proper traffic-control equipment was also provided along the Parkway.

The General Scheme of Lighting

The Congested District, from Broadway on the east to Plum Street on the west, a distance of seven blocks, and thence to Twelfth Street on the north, a distance of two blocks, the total being about 3,800 feet.

With the exception of the "Y" entrance to the Parkway at its eastern end (Broadway), the boulevard in this district consists of a 48-foot parkway in the center, paralleled by two 36-foot traffic lanes.

Located in the center of this parkway strip there is a stately row of speci-

ally designed bronze lanterns mounted high on ornamented cast iron standards, steel pipe reinforced, and having a light center of 20 feet above the ground. Each lantern houses a 40,000-lumen (4,000-candlepower), 20-ampere series lamp, the largest ever made. Each lamp consumes 2 kw. and is energized by an individual safety coil having a 6.6-ampere primary. Each unit is about 140 feet from its neighbor.

On the outside of the traffic lanes, behind the curb, opposite and midway between the bronze lanterns, are located smaller cast iron standards, equipped with Westinghouse Paragon Senior lighting units, each housing a 6,000-lumen (600-candlepower), 20-ampere series lamp, energized through a Westinghouse type GM safety coil. The light center is 15 feet above the ground.

The Industrial District, Twelfth Street north to Liberty Street, a distance of about 2,150 feet.

This section of the parkway consists of a 50-foot parkway strip in the center, with a 36-foot traffic lane on each side. On each side of each traffic lane there is a row of 15-foot standards. These standards are on 60-foot centers, staggered.

The Thoroughfare District, consisting of a single wide boulevard 60 feet wide, extending from Liberty Street to Brighton Corner, about 5,025 feet. Behind the curbs are placed 15-foot standards on 70-foot centers, staggered.

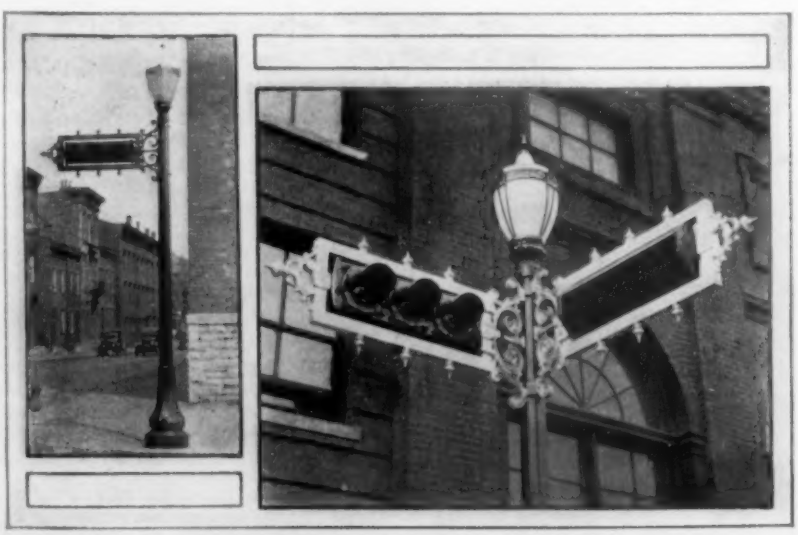
The Board of Rapid Transit Commissioners was vested with power to draw up plans and specifications subject to the approval of the Board of Park Commissioners, to accept bids and award the contract to the contractor. Plans and specifications were drawn up by the Chief Engineer covering details of the installation and suggesting a general design of posts and lighting units. Manufacturers, through contractors, were allowed to submit designs which conformed, in general, to the typical design. The Board of Park Commissioners, headed by Irwin Krohn, and the Board of Rapid Transit Commissioners, jointly, approved the successful designs, those of A. DeVries, Chief Designer, Illuminating Engineering Bureau of Westinghouse Electric & Manufacturing Co. The contract was awarded to the lowest bidder on this accepted design, the successful firm being the Union Gas & Electric Co. of Cincinnati. They were given fifteen weeks (after the expiration of two weeks following notice to begin work) to complete the installation.

THE 20-FOOT STANDARDS IN THE PARKED CENTER STRIP, AND CLOSE-UP VIEW OF THE LANTERN, WITH 40,000-LUMEN, 20-AMPERE SERIES LAMP

Circuits, Cables and Safety Coils

The system is divided into five circuits. Four of these circuits terminate centrally at the Plum and Charles Street Plant of the Union Gas and Electric Co. They are fed by two 68-kw. Westinghouse station type RS constant-current regulating transformers, double circuit, 6.6-ampere secondary coils, 2,300-volt primary. The fifth circuit, an outlying one near Brighton Corner, is fed by a 10-kw. pole type regulator, controlled by one of the four circuits through a South Bend Current Controller Co.'s R.C.O.C. remote-control switch.

The cable between the regulator station and posts is No. 8 conductor, rubber-covered, 4/64-inch lead-enclosed, and is designed for 10,000 volts working pressure. All this cable passes through a 3½-inch fiber duct, pull-boxes being provided at street crossings. The cable is brought through the concrete bases, through tile ells. Within the base of the 15-foot standards are Westinghouse type GM safety coils, 6,000-lumen, 20-ampere secondaries. At the combination light and traffic standards, these coils are placed in special transformer vaults, adjacent to the standards. All coils have hot-galvanized cases, and the coils placed in vaults are provided with detachable couplings, which facilitate the isolation of sections of a circuit for test purposes. All cable connections have been wiped to either the detachable coupling or to the wiping sleeve. The Union Gas & Electric Co., which will maintain this system, satisfied themselves regarding the insulation provided in the safety coils, by a severe test. A coil was submerged beneath water for a number of days, and then tested. The insulation between coils and core withstood 31,000 volts, the factory test on all coils being 20,000 volts.



COMBINATION LIGHT AND TRAFFIC STANDARDS

Standards and Units

The 15-foot standards are of cast iron similar to the Westinghouse Cincinnati

design. The standard is octagonal in shape, alternate sides being recessed. The base, tapering gracefully to the shaft, has four of its flat sides ornamented with an attractive leaf design. The base is 21 inches across flats. The weight of this post is 606 pounds. All standards were constructed of high-test gray iron conforming to the standard specifications for gray iron castings of the American Society of Testing Materials, serial designation A-88-24. The metal used in the standards far surpassed these tests.

The lighting unit on the 15-foot standard is the Westinghouse Paragon Senior. This unit has a light alabaster rectilinear globe, a dense alabaster canopy, aluminum side supports and ornamental bands. The dense canopy provides an effective reflecting surface, making an efficient unit.

The combination light and traffic standards are equipped with an aluminum traffic bracket which houses a Crouse-Hinds TSH-11 traffic-control unit. The method of supporting the aluminum bracket deserves consideration. Through-bolts pass through the end of the bracket into holes in the steel shaft. The cast iron standard is slotted at the top to allow the bracket to rest flush against the shaft. (All combination light and traffic standards have a 3-inch extra-heavy steel pipe for supporting the traffic bracket.) The bolts then go through a boss on the inside of the standard to the outside, where a nut is used to tighten the bracket, shaft, and column into a solid fixture. At each traffic-control intersection, one of these standards is equipped with a control cabinet for the individual control of that intersection by a traffic officer, should traffic conditions at any particular time of the day warrant it. At Plum and Charles Streets, standards are equipped with two traffic brackets, placed 90 degrees apart for the control of two separate lines of traffic entering the parkway.

The Central Standards and Lanterns

The large standards in the center of the parkway between Sycamore and Twelfth Streets are the same design as the 15-foot standards, but are larger and stronger. The base has a diameter of 25 inches across flats. At the top of the column, a shank takes a large ornamental cast-iron top section. Within the standard and top section is a steel pipe, consisting of a 3-inch extra-heavy section swedged to a 4-inch section, for supporting purposes. This pipe extends 4 feet below the ground line. Bolted to the top section we have the large special Cincinnati bronze lantern.

The bronze lantern is massive and ornate. It is over 5 feet from its base to the top of the finial, and octagonal-shaped. All metal parts of this lantern are bronze and it is provided with syenite wire-glass panels. The panels seat against felt strips which cushion vibration and also exclude dust. One panel is hinged and serves as a door for lamp replacements. The lantern is provided with four stay-rods back of the ribs for supporting the top casting. A chromium-plated parabolic reflector is mounted above the lamp within the lantern. The chromium plating provides a highly efficient reflector which will not scratch nor mar from wiping dust and dirt particles off it. The lantern houses a 40,000-lumen lamp mounted in a film socket. This is the largest series lamp ever made. The pressure across the lamp is 91 volts, and when the filament burns out, the secondary of the 2-kw. safety coil is shorted.

All equipment, including two station-type RS regulators and control panels, 23 large standards with top sections and special bronze lanterns, 240 Cincinnati design standards with Paragon Senior lighting units; 263 safety coils, and traffic brackets, was manufactured by Westinghouse Electric & Manufacturing Co.

Foot-candle-intensity curves show a good average intensity and uniformity factor for the three Parkway sections.

The complete system was turned on for use on April 14, 1928, by Colonel Sherill, City Manager, with representatives of the Board of Rapid Transit Commissioners, Board of Park Commissioners, Department of Public Utilities, the Union Gas & Electric Co., and the Westinghouse Electric & Manufacturing Co. present. The flooding of the boulevard with the high-intensity lighting compares to the transformation made when the old canal was converted into the beautiful Central Parkway.

Preventing Unbalanced Bids for Municipal Improvements

A SURVEY by questionnaire of 38 important cities in various sections of the country by the New York State Bureau of Municipal Information recently, indicates that all but a few reserve the right to reject what they may consider to be unbalanced bids.

The Bureau was advised definitely by 23 of the municipalities, that they include in their notices to bidders, or in the specifications, a statement that they reserve the right to reject any obviously unbalanced bid. Eight others replied that they reserve the right to reject any or all bids, but did not state whether they include such a clause in their notices to bidders.

Chicago and several other cities asserted that the department in charge of such matters cannot award any contract which exceeds the engineer's estimate. Portland, Ore., Akron, Ohio, and Tonawanda, N. Y., were among the municipalities which stated that they have no provisions in their specifications regulating or prohibiting unbalanced bids. Portland does require, however, that the accepted bid be not more than 10 per cent above the city engineer's estimate. Akron simply awards contracts to the lowest and best bidder, the lowest bidder being determined by the total bid price. Tonawanda, although having no special provisions relating to unbalanced bids, does not publish or give out any of the engineer's estimates. Officials of that city declared that the publishing of estimates should be stopped, as difficulties in New York State, they believe, arise from that practice.

Several cities reported that insertion of warnings in notice to bidders, regarding rejection of unbalanced bids, has not prevented such bids to any appreciable extent.

Central Heating Plants as a Measure of Relieving Traffic Congestion

THE lumbering coal truck and its running mate, the ash truck, are the most chronic offenders in congesting the traffic of mid-town New York City, according to a survey recently made by Edward W. Forrest, Secretary of the Forty-Second Street Property Owners and Merchants Association.

Several hundred such trucks, according to the findings of Mr. Forrest's survey, appear in the mid-town area every day, holding back other traffic while they are being unloaded and unloaded. Material relief would follow the complete elimination of such vehicles from this and other densely congested sections. But how could their elimination come about?

Mr. Forrest makes two suggestions, either of which he considers practicable. One is to induce property owners to install central heating. Two such central stations now take care of large areas of mid-Manhattan, both being located so as to receive their fuel direct from railroad cars and vessels without its having to pass through the streets. "These are said to be efficiently and economically operated," says Mr. Forrest, "and to provide good service under all conditions."

The other remedy suggested is a city ordinance or police regulation requiring all deliveries of coal and removal of ashes to be carried on at night when other traffic is at lowest ebb. Either of these remedies, it is suggested, would materially aid in reducing traffic congestion in crowded portions of the city. The central heating station plan, in fact, is said to be feasible in residential sections also, to the advantage of all concerned.

The City's Place in Civilization

Abstract of an Address Delivered at the Joint Convention of the National Municipal League, Governmental Research Association and National Association of Civic Secretaries, at Cincinnati, October 16, 1928

By CHARLES A. BEARD

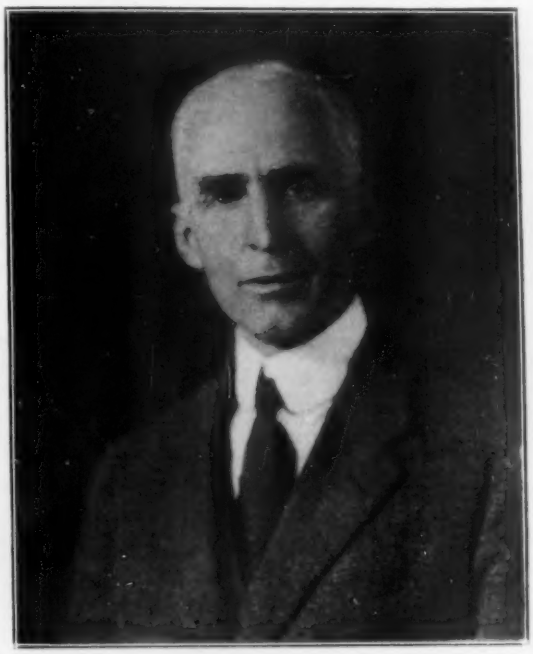
I

ANTAGONISM between the town and country, urbanity and rusticity, capitalism and agriculture, marks the long trail away from the beginning of civilization to the latest political campaign. From it have sprung endless conflicts in parliaments and forums, sometimes raging around scaffolds and flooding out on battle fields. Out of it and in respect of it has arisen a vast literature ranging from Aristotle's "Politics," written in the fourth century before Christ, through the works of Thomas Jefferson, down to the age of McNary and Haugen. In a thousand subtle ways, not yet explored by the historians, this antagonism has affected our literature, our arts, and our theories of the good life. Is it not traditional that Babylon is the home of wickedness and the countryside the source of virtue?

Certainly, no small part of the criticism directed against the urban business man springs from the ancient contempt which the fighting landlord had for the trader who supplied him with luxuries. Spengler's whole book on "The Decline of the West," one of the three or four mighty books of our time, which has made such a furor in recent days, is built around this historic emotion.

Before he began to canvass for votes, Thomas Jefferson was convinced and openly said that "the mobs of the great cities add just so much to the support of pure government as sores do to the strength of the human body. . . . Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, and they are tied to their country and wedded to its liberties by the most lasting bonds. . . . When we get piled up on one another as in Europe, we shall become as corrupt as in Europe and go to eating one another as they do there." Even some of the statesmen who, in Jefferson's time, advocated protective tariffs to encourage manufacturing admitted the evils of cities, but thought they were offset by the utility of industries for national defence and independence.

Vigor, love of liberty, and virtue, these are the signs of rural superiority, according to the makers of tradition. No one will deny that there were in Jefferson's day, and still are, some elements of truth in the argument. But it may now be said with safety that sanitation has made our best cities freer from disease and suffering than most of the countryside. We no longer live in the walled and sewerless towns of medieval times.



CHARLES A. BEARD

Some of the worst conditions of physical decay are in the pure air and under the open sky of the country. Moreover, science and the machine have demonstrated that, by the exercise of imagination and intelligence, cities cursed by their slums and ugliness and dirt can be transformed into places of beauty and inspiration. As for virtue, that must be judged in relation to temptation, and from this point of view neither the public nor the private morals of the city suffer by comparison. County, not city, government is the most conspicuous failure of American democracy.

Whatever our conclusion on this point for the moment, the fact remains, Aristotle or no Aristotle, Jefferson or no Jefferson, cities overshadow the country from the Elbe to the Pacific. They increase in number, grow in size, and absorb an ever larger proportion of the population of each industrial nation. Every invention adds strength to them, every increase in production draws the sons and daughters of farmers to their homes and factories. If a boy from an Iowa farm becomes President of the United States next March, it will not be on account of his familiarity with the hoe handle; but because he is primarily an engineer and promoter of business enterprise. If he loses the contest, he will lose to a boy from the sidewalks of a great city. America has seen the last log-cabin and hard-cider campaign.

II

UNLIKE the urban centers of antiquity, the cities which dominate our social scene are not built on commerce and handicrafts but upon manufacturing, upon machinery and science, with all that implies for esthetics and the good life. Now no one will deny that industry as developed up to our time has been a deadly foe to beauty and the love of beauty—to the finer things of civilization. If anyone has doubts on this score let him compare any American manufacturing town with Oxford or Cambridge in England—especially with those English towns before the advent of the motor-bus. With the inexorable march of the machine in the nineteenth century, art and architecture crumbled into hideous ruins. Lewis Mumford is right when he claims: "It is hardly an exaggeration to say that from 1830 to 1890, the period when the traditional methods in all the industries were supplanted or at least modified by machine production, there is not a book, a piece of furniture, a pattern in textiles, a cup or saucer of new design, which deserves a place, except as an historical curiosity in a museum of art." For an even more sweeping indictment of the machine-city, we have only to turn to the writings of John Ruskin.

Criticism of the city is by no means confined to its esthetic aspects. The shrewd French observer, M. Siegfried, declares that America "is a materialis-

tic society, organized to produce things rather than people, with output set up as a god." Our material prosperity, he continues, "can only be obtained at a tragic price, no less than the transformation of millions of workmen into automatons. 'Fordism,' which is the essence of American industry, results in the standardization of the workman himself. Artisanship, now out of date, has no place in the New World, but with it have disappeared certain conceptions of mankind which we in Europe consider the very basis of civilization."

It would be denying the noses on our very faces to reject such criticism as wholly unwarranted and unfounded. With no little justification such critics might add that, compared with our capacity to imagine and design, every industrial city in the western world is a disgrace to humanity—in spite of the amazing things already accomplished in public works and city planning. But without attempting to measure the exact degree of damnation that ought to be meted out to our machine-cities, we may properly ask: "What is to be done about it?"

III

ONE school of thinkers, believing that no good can come out of the machine, bid us destroy the steam engine and return to handicrafts and agriculture, the balanced and self-sustaining economy of olden times. Doctors of this persuasion point out the beauty of the old crafts, idealize the dignity enjoyed by the independent workman under that system, and in contrast paint a dismal picture of the standardized automaton of the machine shop who spends his days making standardized motions and his nights in the jerry-built house of our industrial slums. It is impossible to ignore the appeal that lies in this scheme of thinking or the attractiveness of the ideal society which it outlines for us.

But whatever may be the heart's answer, the head makes a clear-cut reply: "Economically it is impossible to go back to handicrafts, to restore the self-sufficient community.* Whether we like it or not, the machine drives relentlessly forward, crushing the old order to earth." If a return to the handicraft system is economically impossible, then a return to its arts is equally impossible. Dreamers may try to reproduce the beautiful old squares, churches, guild halls, and towers of medieval Europe, but, as the best German city planners well say, all such efforts are artistic failures, simply because it is impossible in the modern age to reproduce the spirit of the artists who did the old work. The best of modern Gothic, if technically correct, is lacking in the indefinable aura which softens down the austerity of stone and crowns the noblest conceptions of the Middle Ages with a glory that commands silence. No, the lesson of the Middle Ages seems to be that beauty is not a gingerbread decoration added to utility, but is basically an expression of the esthetic sense working through the whole structure of economy from top to bottom.

There is one other lesson in the cities of olden times, not to be ignored; it is that the pictures usually drawn of handicraft and commercial, or pre-machine cities, are false to life or rather leave out of account the mass of the people. Nearly everybody in America knows about the glories of ancient Athens, the temples, public buildings, and sculptures. How many of them ever asked themselves about the homes and streets of the city, about the art and beauty of the countless thousands who slaved, labored and trafficked in that metropolis? Nearly every American has been to Rome by this time and has delivered an oration to his neighbors on the marvels of the Forum, the triumphal arches, and the Pantheon. How many of them ever stopped to inquire: "How did the mass of the people who toiled and moiled around those centers of glory actually live and work?"

Speaking of the masses in Rome, numbering about 300,000 in the age of Cicero, W. Warde Fowler tells us that we know little. "The upper classes," he explains, "including all writers of memoirs and history, were not interested in them. There was no philanthropist, no devoted inquirer like Charles Booth, to investigate their condition or try to ameliorate it. The statesman, if he troubled himself about them at all, looked on them as a dangerous element in society, only to be considered as human beings at election time; at all other times merely as animals that had to be fed in order to keep them from becoming an active peril. The philosopher, even the Stoic. . . though his philosophy nominally took the whole of mankind into its cognizance, believed the masses to be degraded and vicious and made no efforts to redeem them." Cicero, so well known to our boy orators, "when in actual social or political contact with the same masses could only speak of them with contempt or disgust." These multitudes lived in huge tenement houses; and the tenement house, adds Fowler, "must have been simply a rabbit warren." Cicero himself, like many of the best families of Rome, had money invested in slum property, and we know from his letters that it was not always in a good state of repair.

So, too, of the idealized medieval city, it would be easy from authentic records to draw a far from beautiful picture of the life of the nameless masses who lived in fever-infested hovels under heaven-searching spires and glorious town halls, in the old days before the advent of the machine. Unfortunately for social science, we do not know much about these nameless masses, but we know enough to warn us against any vain imaginations, idealizing the handicraft city. Moreover, living examples can be found today in all parts of China. If anyone wants to see such an object lesson, he can find it there with his own eyes—and nose.

The challenge of the agrarians, I frankly accept. Their right to their economic reward must be freely conceded. The necessity of maintaining a fair balance between agriculture and capitalism is, perhaps, the most important issue of our age, in Europe and America.

But the city is not inherently a menace to civilization, as Jefferson believed. On the contrary, it is from the urban centers that the national economy of the future will be controlled, whether we like it or not, and it is the culture of urbanism that promises to dominate the future.

Indeed, we may well ask: What great book, painting, imaginative work, or invention has ever come from the country? Sir Isaac Newton was the son of a farmer, but he developed his talents at Cambridge. Gibbon was the son of a landed proprietor, but he wrote his immortal work in London and Lausanne. The talents of the old South were exhausted in oratory and politics. Dr. Long, of Georgia, one of the discoverers of anesthetics, failed to make great achievements, because he was without the laboratory and hospital facilities furnished by urban centers. Matthew Maury, one of our great scientists, a son of Virginia, unfolded his powers in Washington, where the city furnished equipment for his researches, and a government job the leisure and opportunity. Noble virtues flourish in the country, but creative, inventive, and imaginative talents must have the facilities and stimulus of urbanism, certainly more or less, if they are to develop into great powers.

IV

WHAT, then is our obligation and our mission? If we cannot go back to the pre-machine city or recover the arts of the handicraft age, what roads are open before us? First of all, many things appear to be inevitable, and with the inevitable we must work. Cities will continue to grow; electricity will make it possible to remove many of the worst offenses against the esthetic sense; motor

* Time does not permit a discussion of the revolution in the factory system now under consideration in Europe. See W. Hellpach, "Gruppenfabrikation," and Paul Jostock, "Der Ausgang des Kapitalismus," pp. 240 ff.

roads, released from the cramping limits of steel rails, will spread in every direction, bringing the city and country closer together; urban centers will expand into urban regions, breaking down for millions the old antithesis between town and country; city planning, having grown into regional planning, will be merged into state and nation planning, with technology as its basis. In other words, we are even now in the very midst of transforming the city inherited from the Augustan age of General Grant and Marcus A. Hanna. Only those whose business it is to observe tendencies have any idea of the magnitude of the processes already at work. Moreover, as Mr. Mumford, Le Corbusier, and the new German architects point out, the signs of a new and powerful esthetics, appropriate to the machine age, are already here, promising beauty as well as strength. That is not all: the vision of the new city takes in those masses ignored or scorned by the upper classes of antiquity and the Middle Ages.

Our first task, then, is not to run from the machine, but to stand fast in its presence, to explore its significance, and to make ourselves master of it. Our second task is to nourish the imagination in the threefold aspects emphasized by Ruskin—associative, penetrative, and regardant or contemplative, and to keep burning his seven lamps of architecture—sacrifice, truth, power, beauty, life, memory, and obedience. Our third task is to encourage bold and imaginative thinking about the potentialities of the city, having faith that there is more hope in exuberant radicalism than in deadly conservatism. If radicals are usually wrong, it must be confessed that the conservatives who suppose things will never change are *always* wrong. Finally, let us accept the criticism of the European esthetes that ours is a mass civilization, for it is, and let us see what we can do with it, thus offering at least novelty to an old world heavily laden with other experiments.

But in taking this view, we are not merely American. Many of the best city planners of Europe have frankly accepted steel, concrete, and machinery, and are clothing their dreams in new materials. If it is not sacrilege, I must confess that some of the new working-class houses built by the socialist administration of Vienna are to me more beautiful than most of the old Hapsburg piles, borrowed, copied, and gingerbreaded from half a dozen civilizations and expressing no creative sincerity at any point. Furthermore, it is about as thrilling to see working people living decently as to see upper classes living softly. This is merely personal.

There is high authority for the position taken above. It is the authority of an artist no less distinguished and competent than Le Corbusier. His fundamental position is that we must accept the machine and do our best with it. And in his sketch of a plan for Paris, he has had the courage to outline the field of the coming battle between ideas and materials. "The new event," he flatly says, "is the machine which has reconstructed modern society from the ground up. However, we have not yet measured its significance. A revolution opposed to all previous centuries! No revolutionary spirit reigns, but we stand in the presence of revolutionary relations. We will formulate no revolutionary solutions but will adjust ourselves to a revolutionary state of affairs. If this adjustment does not take place soon, the growing sickness now threatening us will shatter social life."

After this preface, Le Corbusier boldly pictures the new Paris—a Paris that will conserve the beauties of the past while eliminating the consumption-ridden areas now spread all around the glories observed by travelers—a Paris that will make use of standardization, steel, and concrete—a Paris Taylorized. Yes, the artist dares to invoke the shades of the American efficiency engineer! Then, without pronouncing any revolutionary formulas relative to private property, he indicates that the rigidities of landlordism will have to yield to the exigencies of productive industries and the requirements of a decent life.

If the task here outlined is staggering in its complexity and beset with oppressive doubts respecting our powers, still it must be admitted that it is as interesting as driving from one gasoline station to the next. Even the contemplation of its possibilities is as worthy of human nature as meditation on the chances of slipping into heaven through the narrow gate of personal perfection.

The "Practical" and the "High Brow"

America is above all things "practical." In our vocabulary of contempt there is no more scornful symbol than "high brow." It seems to be generally supposed that the man who deserves celebration in story and song is the busy individual "who can do things," even though he may never inquire why he is so laboriously at work or whether he could possibly be engaged in some more ennobling enterprise. In a sense there is justice in the verdict, for were it not for practical persons, indifferent to theoretical ends, the whole superstructure of civilization might come crashing to earth. But there is danger in the verdict also, for practical persons are often unable to calculate the more distant outcome of their actions and can make a lot of trouble in the world: for example, the statesmen of Europe who precipitated the World War were all practical men, trained specialists, and yet the damage they did and the unforeseen consequences of their realistic decisions are awful to contemplate. May we not say, therefore, that the most practical person is one who builds successfully for the longest future, illuminating the task of the hour by a vision of its distant relations? Assuming for the moment that this is true, no apology is now offered for wandering far away from budgets, accounts, city manager plans, and statistical measurements for municipal improvements, into speculations respecting the place of the city in the civilizing process. ***C. A. B.***

EDITORIAL NOTE.—The three municipal and civic conventions held in Cincinnati last month, at a joint session of which the foregoing address by Dr. Beard was delivered, were excellent examples of a proper balance between the "high brow" and "practical" in program-planning.

At the sessions of the National Municipal League there were round-table discussions on "The Negro and Public Affairs," "Measurement Standards in Government," "What is the City Government's Responsibility in Housing?" "Proportional Representation and Democracy in Elections" and "Selling the Work of Government to the Public."

The Governmental Research Association discussed at its separate sessions "Special Assessments" and "Financial Statistics of Cities."

The National Association of Civic Secretaries gave careful consideration to "Organization and Functioning of Committees," "Club Bulletins" and "Methods of Securing Support for a Civic Project."

Among other important meetings held in Cincinnati during these conventions was that of a special committee on the teaching of municipal government in the schools and colleges. Progress was also reported by the National Municipal League's Committee on Metropolitan Government, and plans were announced for the appointment of committees to formulate respectively "A Model Municipal Report" and "A Model Administrative Code," the latter to supplement the League's "Model City Charter," which has exerted a nation-wide influence among local charter commissions. Progress in the adoption of "P. R." was reported at the annual dinner of the Proportional Representation League.

The annual report of the Municipal Administration Service, affiliated with the National Municipal League and the Governmental Research Association, recorded the publication during the last year of pamphlets (already listed in THE AMERICAN CITY) on "Codification of Ordinances," "The Administration of the Gasoline Tax in the United States," "Street Name Signs," "Reporting Municipal Government" and "The Enforcement of Real Estate Tax Liens." Forthcoming reports were announced on "The Appraisal of Urban Land and Buildings: a Working Manual for City Assessors," "Photostat Recording," "Public Franchises" and "Municipal Motor Equipment."

Economy, Charm and Safety of the Cul-de-Sac Street

Suggestions of Great Interest to America, from an Eminent English Town Planner

THE cul-de-sac, or closed-end, street seems certain to play an increasingly important part in modern city planning and subdivision development. In England, where such streets in comparatively limited numbers have for years added to the charm and safety, as well as to the economy, of garden cities and suburbs, the subject is receiving added study as a result of the American plans for Radburn, N. J., which are attracting no little attention among British town planners. As readers of THE AMERICAN CITY are aware,* this new "town for the motor age" has as its most distinctive planning feature the division of the residential section into super-blocks bounded by through traffic arteries; most of the houses facing, not on these traffic arteries, but on the cul-de-sac streets opening off the main highways.

In the *Journal* of the Town Planning Institute of England for July, Barry Parker, Vice-President of that organization and Fellow of the Royal Institute of British Architects, discussing "Economy in Estate Development," calls attention to the almost universal practice of wasting money in poorly planned street systems. Emphasizing the advantages of cul-de-sac streets, he reproduces one of the Radburn super-block plans and also submits what he believes would be an even more desirable adaptation of the closed-end street idea to modern requirements for safety, convenience and economy in the planning of neighborhood units. To quote in part:

"The acid test of the financial efficiency of plans for housing schemes is the length of road per house. The total lengths of roads of the several widths employed in a scheme should be divided by the total number of houses in that scheme, and when the length of road per house has been thus ascertained, it should be compared with the length of road per house

*See the issues of February, 1928 (page 153) and October, 1928 (page 81).

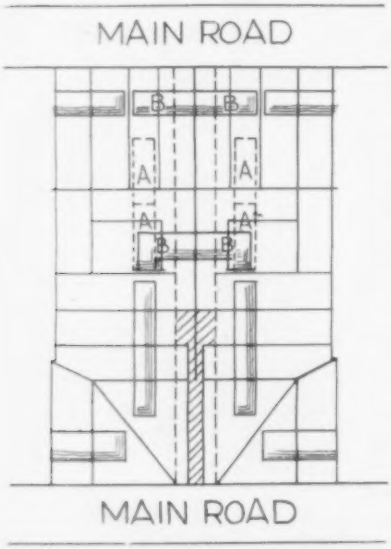


DIAGRAM 1

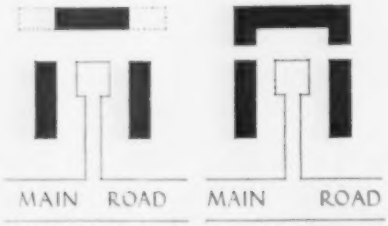


DIAGRAM 2 DIAGRAM 3

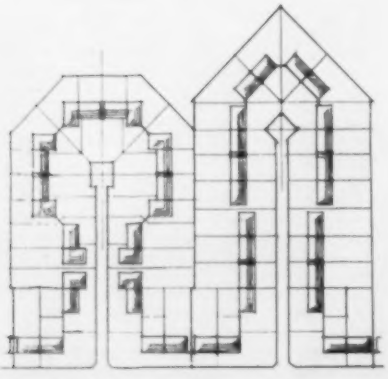


DIAGRAM 4

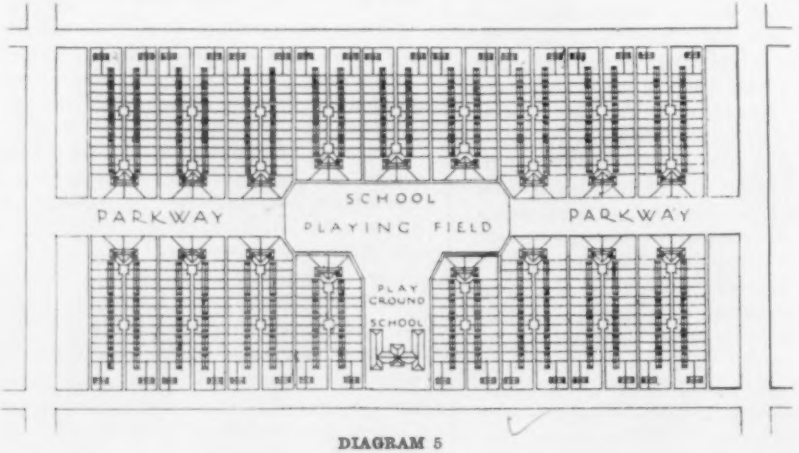


DIAGRAM 5

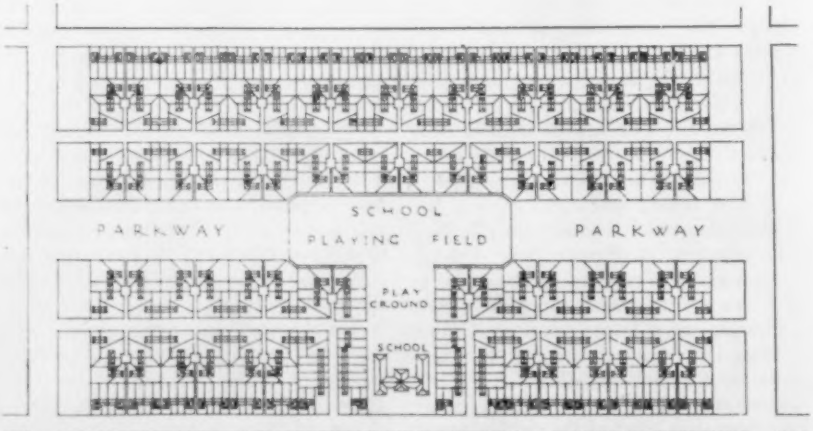


DIAGRAM 6

provided in other schemes and particularly with the length of road per house provided by alternative 'layouts' for the scheme in question.

"When this has been done, it may happen that consideration of amenity may induce promoters of schemes to provide a greater length of road per house, but in every case when promoters of schemes do this, they should do it with exact knowledge of its cost, and after they have put themselves in a position to determine that the amenities secured are worth that cost.

Greater Financial Returns from Reduced Congestion

"The veritable *pons asinorum* of town planning is that it is not by increasing the number of houses to the acre, but it is by reducing the number of houses to the acre, that financial returns on land development are increased, and economies in land development are made. . . .

"The fact is that if we only considered economy of development [in laying out a new community] we should develop from a civic center by means of roads radiating from that center, and by means of such roads only, and we should welcome the extraordinary 'sparse' development and the abnormally small number of houses to the acre of land which would result from our doing this.

"We should never construct any short cross roads connecting main roads one with another, because such cross roads never pay. But traffic and other requirements make cross roads necessary, so we introduce them and accept the loss entailed thereby.

"Eventually we always have to decide how frequently along our main roads, traffic and other requirements determine that these cross roads must occur, and it is upon our decision as to this, that the resulting number of houses to the acre of land is dependent.

"Where these cross roads are more frequent, the number of houses to the acre is greater, but the lengths of roads and sewers, and of gas, water and electricity mains per house are also greater. Where the cross roads are less frequent, the number of houses to the acre is less, but the lengths of roads and sewers and of gas, water and electricity mains, per house, are also less.

"It has now been proved beyond question that the introduction of these extravagant cross roads at intervals so frequent as to yield more than twelve houses to the acre is certainly unnecessary where land is not abnormally expensive nor traffic requirements unusual. . . .

Maximum Access to Houses from Minimum Road Mileage

"The use of the cul-de-sac road is a means by which large savings in the lengths, and therefore in the costs, of roads may be made, and by which given lengths of road may be made to afford access to a greater number of houses, which is yet far from being fully appreciated or understood.

"The cross road in Diagram 1, when carried through from one 'main road' to the other, only affords access to the same number of houses as it will afford access

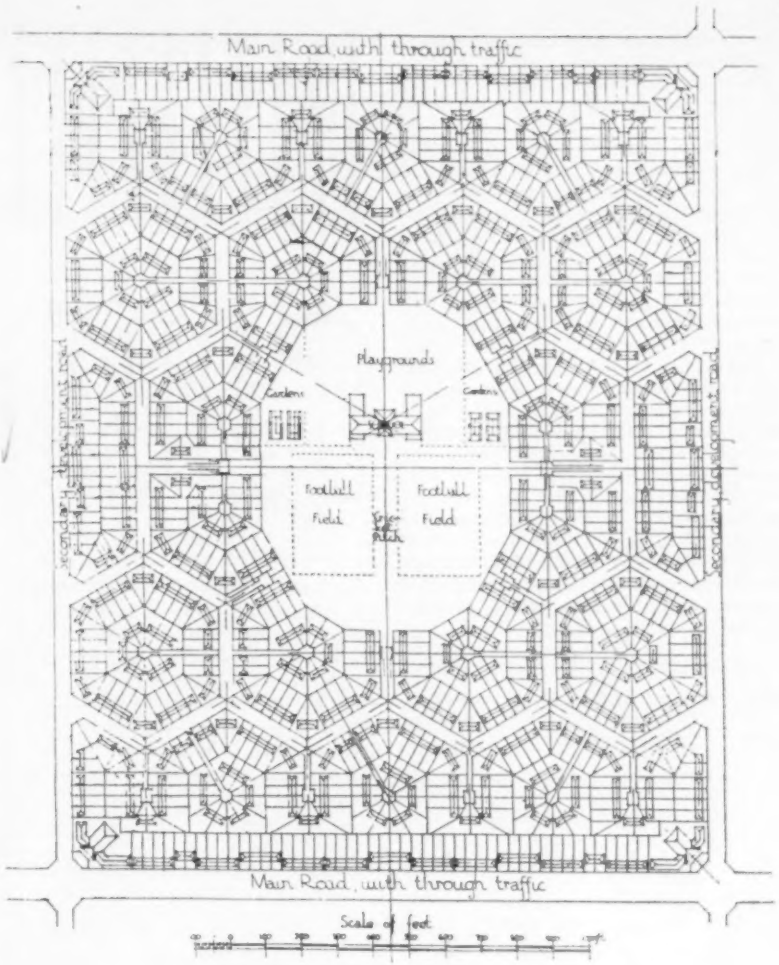


DIAGRAM 7

to if that portion of it which is shown dotted were omitted and the houses marked "A" on the diagram were built at "B," and instead of a cross road a 'cul-de-sac' were thus created.

"It will be noticed that in addition to the considerable saving of road, there is sufficient land saved on which to build three or four cottages, but which is here devoted to the existing gardens and to the creation of spaces available for such amenities as playgrounds, allotments, etc. . . .

"The two houses shown in dotted lines in Diagram 2 would only overlook the ends of neighboring houses, and so are too disadvantageously placed to be considered. But if they are turned round as in Diagram 3, for the same expenditure on roads and services two more houses are obtained. The principle explained by these diagrams is capable of application in innumerable ways.

"Diagram 4 gives one. It shows the relative lengths of a cul-de-sac road needed to afford access to a given number of cottages when straight blocks of cottages are adopted and when blocks of cottages with end cottages turned are adopted.

"That blocks of narrow fronted cottages, i.e., of cottages all turned with their ends instead of their sides to the road, are necessarily and inevitably so wastefully planned and expensive to build as to more than absorb any saving on road charges and on services made by their having narrow frontages, is now so completely proved and so universally accepted that no one will now advocate their being adopted. But the turned end houses of a block are not necessarily any more wastefully planned and the unavoidable extra cost of charges they effect is obviously and amply worth while.

A Possible Alternative for the Radburn Super-Block Plan

"For a new town to be known as Radburn, 1,005 acres of land have been purchased in New Jersey, and 17½ miles from New York City, by a limited dividend company named The City Housing Corporation.

"The architects for this town, Clarence S. Stein and Henry Wright, have, in association with Robert D. Kohn and Frederick L. Ackerman as consultants, prepared most interesting studies, embodying principles they suggest should be applied in the layout of its residential districts. Starting with the thesis that town planning for the present motor age should be fundamentally different from what town planning has been in the past, they arrange, as here indicated in Diagram 5, that no child shall have to cross a road on

its way to or from school. This they accomplish by placing all the houses in cul-de-sac roads which open off the main roads, and behind each house a footpath leading to the park in which the school stands.

"I would like to suggest to them that their cul-de-sac residential roads coming out on to the main traffic routes at so frequent intervals create dangers and anxieties for the motorists on the main traffic routes, and I would remind them that the Town Planning Institute advocates that junctions of other roads with main traffic roads should never be made at intervals less than a quarter of a mile apart, and I would ask them whether this possible objection to their proposals could be overcome by their adopting some such suggestion as is here embodied in Diagram 6, which removes the necessity for children crossing main traffic roads on their way to and from school, and renders it only necessary for them to cross quiet residential roads, on which there will be little traffic of any kind, and no 'through' or fast traffic, and yet provides for roads to abut on main traffic roads at infrequent intervals."

Advantages of the Hexagonal Block Idea

Mr. Parker also discusses the advantages of the hexagonal block idea* as advocated by the Canadian town planner, Noulan Cauchon of Ottawa:

"Mr. Cauchon pointed out that a saving of ten per cent on the length of road per house, and therefore on the cost of road per house, would be made by the adoption of the hexagon in substitution for the rectangle as the basis of a layout, and that the adoption of hexagonal planning caused there to be no right angle road junctions and therefore only unusually safe road junctions and road junctions at which every driver could see all oncoming traffic long before he met it. (Diagram 7.)

"What the saving of ten per cent of development means and what its effect on finance would not need be enlarged upon here. Frequently it would make possible that which would be impossible without it.

"Arguments similar to those used by Mr. Cauchon in favor of hexagonal planning in general, apply to Diagrams 8 and 9. The introduction of two hexagons in Diagram 9 enables a piece of land the same size as is the piece shown in Diagram 8 to be developed for the same number of houses with three cross roads in place of four cross roads."

In conclusion, Mr. Parker points out that not only can savings in capital costs be made by causing given lengths of road and utilities to serve a greater number of houses, but also that consideration should be given to the savings in maintenance, upkeep and supervision which result, to say nothing of the saving in shortening the rounds of the postman, the milkman, the garbage collector, etc., and in the distances we have to go to centers of amusement and recreation, to shops, to the station and to visit our friends.

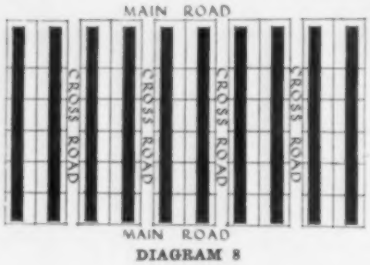


DIAGRAM 8

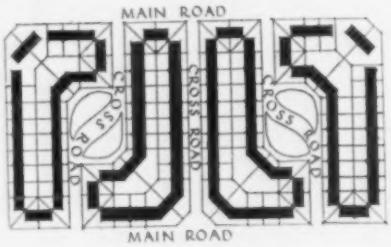


DIAGRAM 9

*See THE AMERICAN CITY for August, 1925, page 145.

Crowding of Buildings Condemned by Illumination Expert

CITY planners, traffic experts, health specialists and social scientists are among those who have voiced protests against the skyscraper epidemic of many cities. A new warning now comes from another and perhaps unexpected source —the illumination engineer. Crowded business districts with towering skyscrapers were termed "crimes against public health" in an address by P. J. Waldram before the seventh meeting of the International Commission on Illumination, which took place at Saranac Inn, N. Y., in September.

"Artificial substitutes for light and air, no matter how good they may be, only partly replace pure air and daylight," Mr. Waldram said, pointing out that sunlight had been found to be a positive cure for several diseases and that lack of sunlight was responsible for many others. He continued: "Watch the seething flood of humanity in any modern town going home every evening. Is not the pale, anemic, weakly townsman the contempt of every healthy countryman? This is not merely the result of a sedentary occupation. Some of the finest athletes are sedentary workers. It is the enervating result of lack of air, lack of light, lack of sunshine, even in new buildings, which in nine cases out of ten sends a man or a woman home too listless to walk, too tired to take advantage of opportunities of fresh air and exercise."

The solution of the sunlight problem, Mr. Waldram said, is in laws prohibiting construction of buildings too close together. He pointed out that such measures always met with strong opposition from business organizations in their struggle to utilize all existing facilities in one district. However, he held out hope that enlightened public opinion, increasingly appreciating the value of daylight and the health-giving solar rays, would demand such laws.

He further stated that while business men shouted the advantages of a constricted area to save time, traffic problems were so perplexing that little time really was saved; and the increased utilization of telephone and telegraph had eliminated to a great extent the need for concentration. He proposed that an international code be promulgated for guidance of architects and framers of building ordinances, and offered the two following suggestions for guidance:

"That positions from which no sky at all is visible at table height are inadequately lighted for ordinary purposes, such as clerical work; and

"That it is undesirable that rooms should be constructed or used for habitancy or for work over long periods, unless they have some sky visible from table height over a reasonable portion of their area."

City Planning Defined Again

IN a recent issue of the *Community Builder* Dr. Carol Aronovici offers several excellent definitions of city planning:

"City planning deals with the physical conditions of communities in their relations to the needs of the people.

"City planning deals with the methods of building communities so as to provide for the best conditions of living, the most efficient means for carrying on labor and the safest and most constructive facilities for the use of leisure time."

If city planning is to be looked at from the point of view of the technician and the artist, he proposes this:

"City planning is the development of a proper relation between mass and space."

"Whatever definition we might accept as the most suitable for a particular purpose, it seems quite obvious that the subject matter of this important phase of human endeavor *deals with the essentials of community building in their relation to human needs both for the present and for the future."*

"To Make a Long Story Short"

Municipal and Civic Plans and Accomplishments Briefly Told

Nine Police Training Schools Being Established in New York State

NINE municipalities have been selected as sites for the police training schools to be conducted in New York State this winter in accordance with the resolution passed at the last annual meeting of the New York State Conference of Mayors.

Buffalo, Rochester, Syracuse, Utica, Schenectady, Troy, Binghamton, White Plains, and Mineola are the cities designated as the centers of the nine zones in which training is to be offered policemen. Municipal schools are now operating at Buffalo, Syracuse, and Schenectady, and other training schools are being conducted at Troy by the State Police and at Mineola by the Nassau County Police. The municipal schools at Rochester, Utica, Binghamton, and White Plains will be established before the end of this year.

Cornelius F. Cahalane, organizer and for many years head of the New York City Training School, and now police consultant for the Holland Tunnel Commission, is in charge of organizing the state-wide work. The New York State Police Chiefs' Association has endorsed the plan and appointed a commission to assist.

Each city and first-class village will have an opportunity to send its policemen of two years' or less experience, to the training school in that zone in which the community is located. The State Police institution at Troy, in addition to providing training for cities and villages in the Troy zone, will offer its facilities to all municipalities in the state. The New York City Police Academy will be used for training in special branches of police service, such as detective work, finger-printing, etc. Facilities, curriculum, time and length of operation of each of the other schools, will depend upon the needs of the departments in each zone as determined by the police chiefs.

Chiefs of cities and first-class villages in each zone have been conferring with Mr. Cahalane during the past few weeks concerning the particular training work to be stressed in their sections. Upon completion of the preliminary details, instructors in all training schools will be sent to New York City to a special school where for one week they are to receive intensive training on the best methods to instruct policemen.

"Police training facilities are being provided on a state-wide basis to meet the very insistent demands by practically all local police departments," according to Mayor Frederick C. McLaughlin, of White Plains, President of the Mayor's Conference. "Most municipalities lack local training facilities and it would be financially impracticable for them to provide them. We have therefore undertaken to organize the work on a cooperative basis. The schools will be so located and operated as to make them easily available for every city and first-class village in the state. In addition to providing training for those policemen who most need it, we believe that this plan will bring about closer cooperation among the police departments in each zone and promote more uniform police procedure and methods throughout the state. The schools will devote their entire time exclusively to police-work and crime-prevention problems."

New Jersey State Police to Conduct Training School for Municipal and County Police Officers

PLANS for a training school for municipal police officers of New Jersey, to be known as the New Jersey Police Academy, are being perfected by Colonel H. Norman Schwarzkopf, Superintendent of the State Police of that state.

An outline of the project as presented by Colonel Schwarzkopf on October 11 has been approved by a group of mayors and other city officials comprising the Executive and Advisory Boards of the New Jersey State League of Municipalities. The proposition is somewhat similar to the training school system for municipal policemen being worked out in New York State by the State Conference of Mayors, except that New Jersey is pioneering in using the training facilities of the state for this purpose.

The State Police Training School, four miles from Trenton and otherwise idle between terms from December 15 to March 1, will be used in the initial courses for the municipal and county police officers. Courses to be offered the municipal police will require one month and for the initial experiment will be conducted in January and February with the attendance limited to 40 students for each term.

Appointment to the school will be by mayors or commissioners of public safety and only for men on leave of absence who would be returned to duty after graduation. The quota for first-class cities probably will be three men; second-class cities, two men; other municipalities, one man; first-class counties, two men; other counties, one man; and state officers, five men. Classes of 40 will be divided into groups of 10, permitting individual attention by the instructors.

The course of study proposed will include all the information an efficient officer should have, according to Colonel Schwarzkopf. He intends to obtain, through the State Police organization, the best lecturers on subjects of vital concern to officers, including methods of handling various types of cases. First aid, marksmanship, ju-jutsu and finger-printing are to be included in the curriculum with a special system of physical training.

Open to all policemen who wish to increase their efficiency and ability in their field, the school especially will encourage enrolment of sergeants and lieutenants, who, after receiving instruction, are in a position to encourage application of up-to-date methods.

Colonel Schwarzkopf is now preparing a prospectus of the school to be distributed this month to all mayors and police departments in New Jersey.

Continued Progress in the Fight Against Typhoid Fever

TYPHOID fever is one of the few diseases which are usually most prevalent during the summer months. This year the number of cases of typhoid fever in the United States has been unusually small. The following table from *Public Health Reports* for September 7, 1928, gives a comparison of the numbers of cases reported by 41 states for the eight weeks from July 1 to August 25, 1928, and the corresponding period of the years 1927 and 1926:

NUMBERS OF CASES OF TYPHOID FEVER REPORTED

		Corresponding Week	
Week Ended—	1928	1927	1926
July 7, 1928	389	785	774
July 14, 1928	608	870	835
July 21, 1928	614	959	831
July 28, 1928	705	890	1,086
Aug. 4, 1928	791	946	1,089
Aug. 11, 1928	910	1,088	1,215
Aug. 18, 1928	938	1,022	1,326
Aug. 25, 1928	866	1,130	1,371
Total, 8 weeks	5,821	7,690	8,527

The accompanying graph shows the number of cases reported by 41 states for the years 1926 to 1928.

Turning Unused Land and Buildings into Public Recreation Assets

ONE important reason for an adequate recreational survey is that property at hand or easily accessible may be made to play an important part in the public recreation scheme at a great financial saving, or to provide otherwise impossible recreation facilities. Four examples may be cited from recent news sources:

1.—The city of Albuquerque, N. Mex., now owns a splendid new 65-acre recreation park and zoo where formerly was a swamp, and where the land was at certain seasons under water. In the face of considerable opposition and a facetious

terming of the plan the "Mosquito Park project," the tract was bought and drained. Thus a wide variety of active and passive recreation facilities was provided, and in the process a bad sanitary condition was corrected. As it has since proved, a startling twist was also given to the direction of city development, to say nothing of increased waterfront land values. The zoo animals have been provided entirely by citizen generosity. The latest news bulletin states that the women's club is buying an elephant.

2.—Janesville, Wis., has a 140-acre riverside park of varied and interesting topography, bought at a very low figure some time ago, when municipal officials took radical action and bought outright the whole tract, which had won an unsavory reputation through a commercial amusement park located on it. The city had no public play place before. The land was bought cheap at the time, and at only a fraction of its present-day value.

3.—Tulsa, Okla., has taken over an old power-plant formerly operated by the Water Department and has converted it into a number of swimming pools. One of these is 186 feet long and 70 feet wide. Several are in active operation and are free to youngsters under 15, with swimming instruction thrown in.

4.—To show that almost anything may be utilized in shaping up a community play program, the city recreation department in Houston, Texas, is reported to have plans under way at present for converting an abandoned public incinerator into a children's theater.

Industrial and Municipal Research Activities of the Massachusetts Institute of Technology

SINCE the establishment in 1926 of the Division of Industrial and Municipal Research of the Massachusetts Institute of Technology, the principal field work done has included the preparation of a zoning ordinance and main street plan for Meriden, Conn.; a comprehensive industrial survey of Metropolitan Providence; a limited community survey of Norwood, Mass.; and a zoning and economic survey of Bangor, Maine, the latter work being now in process of completion.

In reply to a request from THE AMERICAN CITY for an outline of this interesting field service of the M. I. T., William A. Bassett, Director of the Division, sends the following statement:

"The Division of Industrial and Municipal Research was established at the Massachusetts Institute of Technology in 1926 to meet what was felt to be a definite need for providing communities with competent impartial advisory service with respect to their industrial and other problems. The only restriction placed on the service provided, if it could be called such, is to avoid any encroachment on those fields at present served adequately by consulting engineers or other municipal consultants. In establishing this Division a definite purpose in mind was to provide a means of making economic or industrial studies of communities. The precise scope of work of this character will naturally be influenced by local conditions, but in our judgment an economic or industrial survey of any community generally should give appropriate recognition to the following matters:

"Ascertaining just what enterprises comprise the industrial and business life of the community and procuring certain information relating to their economic condition and requirements for different kinds of service. This may well be termed taking a descriptive inventory of the community industrial and business resources.

"Reviewing in considerable detail the transportation facilities in any community, together with those concerned with furnishing of electric power, water-supply and other utility service, for the purpose of ascertaining the adequacy of these facilities to meet community requirements, and the equity of charges made.

"Making an appropriate study of labor conditions with particular reference to conditions influencing employment, cost of living and the character and sufficiency of housing accommodations available.

"Supplementing the above, in our judgment, an economic or industrial study of any community should likewise include an appropriate study of conditions attending the administration of local government with respect to governing policies and administrative methods employed. It has been aptly stated that "the power to tax carries with it the power to destroy," and the inept administration of public affairs or an inequitable distribution of the tax burden can and frequently does work a serious hardship to the industrial and business life of a community.

"It is of course recognized that the work being done by this Division of the Institute constitutes a new approach to an old field of endeavor, rather than contributing anything particularly new or novel in character. The Division is prepared to furnish service such as is tentatively outlined above at the request of interested parties on a cost basis plus a moderate fee.

"In a recent issue of *Judge* appears the following apt comment on research: 'Starting with a fact, linking more facts to it, letting them come to life, articulate themselves, and drag you along with them regardless of where they take you, is the only kind of research worth the time of any honest person.' 'First let's get the facts' may be stated as a fundamental policy governing the work of this Division. Such a policy, if intelligently followed, it is believed should not alone meet a present need but also offers the opportunity for a public service of real value."

The Traffic Bureau Learns Some Simple Geometry

NOT many months ago, in an "up and coming" textile city of South Carolina, an automobile driver met with a puzzling situation in trying to park her car. There were two contradictory regulations indicated by signs: the white line drawn parallel to the curb, and but a car's width from it; and a painted sidewalk sign reading, PARK AT AN ANGLE OF FROM 23 to 45°.

The driver chose the angle and after an hour's shopping returned to her car, anticipating a "white slip" from the corner policeman—and it was there.

Wanting to expound her knowledge of geometry, Miss Enterprising Citizen went direct to the City Hall, where she explained that when she went to school she had learned that 180° represented a parallel position, and that abiding by that principle she could not have parked at an angle of from 23 to 45° and been parallel to the curb and within the white line too.

The desk sergeant accepted her geometrical precision, thanked her, and asked her to watch for the removal of the sidewalk sign, which was accomplished almost within the hour.

Threatened Cutting of City Planning and Park Budgets Checkmated by Organized Public Opinion

IN a secret caucus on August 22 the City Council of Evansville, Ind., without previous public discussion on the matter, suddenly determined to eliminate from the 1929 city budget the usual levy of 8 mills per $100 for the upkeep of the City Plan Commission. The announcement through the newspapers on the following day resulted in a storm of protest against this action. Civic leaders gave public expression of their disapproval. Civic organizations took action on the matter and sent resolutions and letters to the Councilmen and other city officials urging reconsideration by the Council. The Councilmen received numerous personal calls pointing out the necessity of a City Plan Commission and urging that the Council's action be changed.

During the week which followed the caucus above mentioned, all three newspapers gave wide publicity to the threatened curtailment of city planning in Evansville and showed unquestionably not only that the newspapers themselves were strongly supporting the city planning movement, but that there was a general public feeling that the Council had made a mistake.

On August 29, when the Council meeting for final action on the city budget for next year was held, a large delegation of citizens was on hand to urge that nothing be done by the Council to interfere with the operation of the City Plan Commission. The Council had learned since their previous action that under the State Enabling Act for City Planning, it would be impossible to cut out entirely the city planning levy. They could, however, reduce the levy from 8 mills to 3 mills, and this is what they were pledged to do before the meeting started. However, when delegations from the Chamber of Commerce, the Tax Conference Committee, the Real Estate Board, the Rotary Club, and the Kiwanis Club had finished with their pleas for the retaining of the City Plan Commission on the usual basis, the Council reversed its previous decision and upheld the 8-mill levy by a vote of 7 to 3. Citizens who attended the meeting were very much gratified at the result, not only on account of the determination to back the City Plan Commission, but especially because the concerted efforts of the citizens in a civic matter had been rec-

ognized by the Council and had thus proved to be worth-while.

Another determination of the Council was reversed at the same time. The annual levy of 10 cents for the maintenance of the Park Department was to have been reduced to 8 cents, but by the same action which upheld the City Plan Commission, the 10-cent levy of the Park Department was retained. Had this not been done, it would have been a serious blow to the Recreation Department, which has been put on a modern basis by the Park Department within the last two years and which depends on the Park Department for funds.

R. W. BLANCHARD, Executive Secretary,
City Plan Commission.

Selling Cincinnati's Government to the Taxpayer

THE city of Cincinnati from September 24 to October 2, held the largest municipal exposition that has been held in this country in recent years. More than 45,000 persons visited the City Hall during the nine days and examined extensive exhibits illustrating the activities of the various city departments, the Board of Education and the municipal University.

The exposition was staged in order to acquaint taxpayers and other citizens with the work of the city government. It was recognized by the City Manager that the average man knew very little of the many ramifications of the city government and of the numerous contacts which it had with the public. The "City Hall Week" served to interest large numbers of persons who ordinarily pay little attention to civic affairs and who, in many instances, never read the municipal reports or other printed matter relating to the city's administration. It served to show the public just what the city's funds were expended for and to demonstrate the efforts which are being made to conduct the city's affairs on a businesslike basis. There was something of interest for everyone—the housewife, the business man, the mechanic, and the school child.

REPRODUCTION OF POSTER ANNOUNCING THE RECENT MUNICIPAL EXPOSITION IN CINCINNATI

The thirty distinct exhibits were arranged in the corridors of the municipal building on three floors and in the basement. Large bulletin boards were specially constructed to display the numerous posters, charts, maps, and photographs prepared by the several departments. A few exhibits were arranged in specially constructed booths on the order of show windows in department stores. Some of the departments made use of electrical and mechanical devices in operation. The Park Board furnished large numbers of evergreen shrubs, palms and flowers, by which the entrance of the City Hall was rendered attractive. An exhibit which provoked great interest was a large topographical relief map of the city, which had been constructed many years earlier and which was brought completely up to date for the exposition. Emphasis was laid in many exhibits on "before and after" photographs showing the accomplishments of the present administration, particularly as to street improvements and other public works.

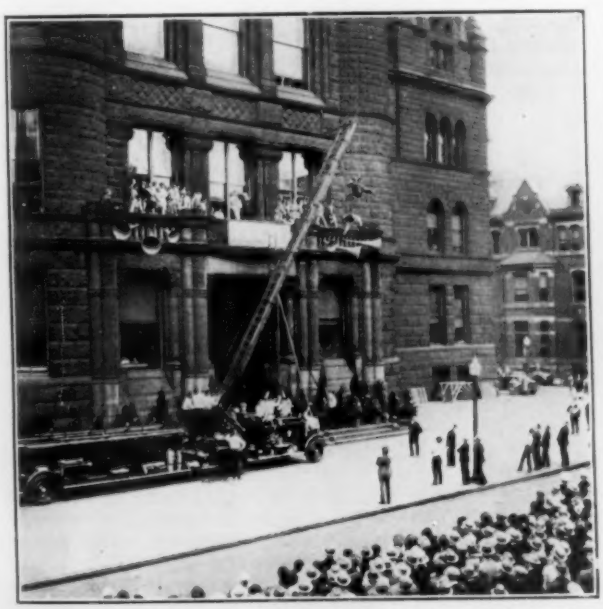
Another interesting feature which brought large crowds to the exposition was the staging by the Fire Department of drill evolutions on the plaza in front of the building. Firemen rescued their comrades from windows high up in the City Hall, made rescues from electric wires, and jumped into life-nets, with all the realism of a genuine conflagration. The evolutions were staged during two successive afternoons.

Another formal event in connection with the exposition was its opening, to which municipal officials from the surrounding territory were invited. Attractive posters in black and orange advertised the exposition throughout the city and appeared on the front end of all street cars for a period of one week. Invitations were also extended to householders by means of a printed invitation from the City Manager delivered in connection with the monthly water bills. Guides were furnished to conduct visitors through the building.

R. O. BECKMAN,
Director of Personnel, Cincinnati, Ohio.

To Make Construction Work Less Noisy

STEEL fabricators of the United States and Canada are endeavoring to eliminate noise in construction work, according to the American Institute of Steel Construction. This subject will be given special consideration at the annual convention called by the Institute to meet at Biloxi, Miss., November 13 to 17, inclusive. The fabricators are contributing to research in welding, and if these investigations prove successful, steel frame buildings may be erected with as little noise as was the case when Solomon built his temple.



WATCHING THE DRILL EVOLUTIONS OF THE CINCINNATI FIRE DEPARTMENT

SAFETY FIRST EXHIBIT OF THE POLICE DEPARTMENT OF CINCINNATI

Official Survey Discloses Dangerous Conditions in Indoor Swimming Pools

A SURVEY of indoor swimming pools in Connecticut has been conducted during this year by the Bureau of Sanitary Engineering of the State Department of Health, and its results, as presented by Warren A. Scott, Bureau Director, in the *Connecticut Health Bulletin*, September issue, show necessity for more sanitary supervision by local and state authorities, and for adoption of regular water-sampling schedules.

This survey was conducted as a check-up on the extent to which requirements of the state sanitary code are being fulfilled by pool operators and in pursuance of investigations and activities begun in 1925. At that time a comprehensive survey was made of indoor pools. These were rated as to sanitary conditions, which in general were not found good, and accordingly a conference of swimming-pool operators was called, and meantime definite operating suggestions were provided to all swimming-pool managements. In the 1928 study, residual chlorine tests were carried out; samples of swimming-pool waters were collected and analyzed; and general observations were made as to the appearance of the pools and of operating procedure. A classification was made for the second time on the basis of findings; and the comparative tabulations then made of 1925 and 1928 results are reported as "far from encouraging." Lack of improvement as shown is attributed to the carelessness and indifference of pool management officials. Whereas some pools have attained a satisfactory rating, some have slipped back, and some have retained their former low standing. It is shown that wherever an earnest effort has been made, marked improvement has come about.

The State Department of Health has cooperated with local officials for raising sanitary standards of swimming pools as far as its own limited personnel permits; but more activity, both state and local, is shown to be needed in order to raise ratings which are shown to be poor, mainly for two reasons: (1) failure to maintain residual chlorine in the water, with consequent poor bacteriological results; and (2) failure to maintain the pool in an alkaline condition, with the existence of acid water. The results found and remedies proposed are discussed at some length; and summarized as follows:

	1925	1928
Pools shown to be "very good"	3	5
Pools shown to be "good"	3	6
Pools shown to be "fair"	27	10
Pools shown to be "poor"	8	18

"It is hoped that arrangements can be made with local health officers whereby samples for tests for bacteria, hydrogen ion concentration and alkalinity, can be collected from the inlet and outlet ends of each pool at intervals of about two weeks and sent to approved local laboratories or the State Department laboratory for analysis. The collection of samples by the local health officers instead of by the swimming-pool operators would insure that samples will represent varying conditions.

"Each swimming pool should have an intelligent supervisor and equipment to make tests for residual chlorine and for alkalinity or hydrogen ion concentration or both. These tests should be made at least daily and more often until it is definitely assured that proper results are being secured. It should be borne in mind that on account of varying conditions of swimming pools and varying bathing loads, it is difficult to fix on definite chemical dosages satisfactory at all times."

It is felt that when these suggestions are carried out, the standards of Connecticut pools can be raised to a high plane.

Annual Vacations of Village Officials

TWO weeks with pay constitutes the usual vacation period each year for municipal officials and employees, exclusive of policemen and firemen, in villages of New York State, judging from data collected from 39 such communities by the New York State Bureau of Municipal Information. In fact, 28 of the villages replying adhere to the two-week plan. Depew grants fifteen days, Kenmore and Hastings-on-Hudson 10 days each and Walden and Fredonia just a week.

There are six villages on the list which do not grant any vacation with pay. Catskill, Dobbs Ferry, Johnson City, Lancaster, Seneca Falls and Tarrytown compose this group.

Underground Wiring in New Subdivisions

ENLIGHTENING information regarding underground wiring in new sections was obtained recently from 14 cities in answer to a questionnaire mailed by the Municipal Reference Bureau of the University of Cincinnati.

Baltimore, Md., and Beverly Hills, Calif., were the only two cities reporting that they have requirements calling for provision to be made for placing wires underground as a condition of approval of the plat of a new subdivision. In the case of the California city, however, this requirement applies only to about 10 per cent of the lots, such lots not being served by alleys.

In answer to the query as to whether or not subdivisions already exist which have underground wiring, although not required, Chicago, Indianapolis, Kansas City, Los Angeles, Providence and Seattle all reported such instances. Cities replying to the question on comparative costs of underground and overhead wiring, estimated that the underground installation costs about three times as much. Despite the much higher initial cost, however, it was generally agreed that because of lower maintenance expenses, the underground system would prove the more economical in the long run. In some subdivisions, the telephone or light companies allow the cost of installing the overhead pole system, and the subdivided stands the remaining expense of underground installation.

Practically every city in the group reporting is required by law, or makes it a point, to place overhead wires in alleys or on rear lot lines. Where alleys have been eliminated in residential districts, nearly always easements have been reserved along the rear property lines for the construction of telephone and light poles and wires. Along many main thoroughfares and avenues where main feed lines run, the overhead systems have been abolished, several of the cities stated. Every effort is being made in all the cities replying to keep the poles and wires off the streets, because of their unsightly appearance and interference with tree growth.

Little information was obtained in response to what interests opposed, and what considerations defeated, requirements for underground construction in cities where it is not required. It was intimated in a few instances, however, that possibly the utility companies themselves or the subdivision developers would oppose such a requirement, on account of the extra expense involved.

Baltimore to Have Permanent Film Record of Affairs

ACCORDING to present plans of the administration in Baltimore, all events of importance in the growth and history of the city are hereafter to be recorded in motion picture form.

A number of permanent records have already been made, reports the *Municipal Journal* of that city, in a recent issue. Among them are the regatta and convention of the Atlantic Deeper Waterways Association, the laying of the cornerstone for the Museum of Art, Baltimore Day at the Fair of the Iron Horse, Baltimore's reception of Colonel Lindbergh, awarding of medals to firemen for valor, and the second inauguration of Mayor Broening.

The films are said to represent a high standard of excellence technically.

Average Distance of Airport from City Is Three Miles

THE average distance of airports from the business centers of municipalities in the United States is about three miles, according to a study made of such facilities in 436 cities by the Aeronautics Branch of the Department of Commerce.

Considerable variety prevails, however, in the individual cases, some airports being within one-quarter of a mile of the business district, and others being as far out as 18 miles. As might be expected, the larger the city the greater is usually the distance to its airport from the downtown section. In a number of municipalities of more than 100,000 population, the average distance to the airports was found to be approximately 7 miles.

The Department of Commerce on several occasions has stressed the serious disadvantages of this rather general condition and emphasized that accessibility is one of the most vital requisites of a municipal airport. Finding it impossible to obtain sufficient acreage for an airport in the heart of the city, many municipalities fronting on bodies of water are striving to solve the problem by reclaiming or adding territory on the water's edge.

Practical Means of Building Safety into Streets and Highways

By ROGER L. MORRISON

PROFESSOR OF HIGHWAY ENGINEERING AND HIGHWAY TRANSPORT, UNIVERSITY OF MICHIGAN, ANN ARBOR, MICH.

A FEW years ago a safe road ordinarily meant one over which a vehicle might proceed without being wrecked, provided it was driven slowly enough at bad places, but now a road is not usually considered safe unless it is reasonably so for high-speed traffic. Many requirements for this kind of safety are more or less well known by the majority of people, but they are so often neglected that mention of them appears to be justified in any discussion of the subject.

Surely nothing is better understood than the inherent danger in certain surface conditions, and yet loose gravel, for instance, is allowed to take its yearly, and even daily, toll of life, limb and property. Clouds of dust on untreated gravel and macadam roads are often serious hazards, and wood block pavements on comparatively steep grades continue to claim their victims with every rain. Unnecessarily high crowns on many roads and streets cause drivers to hug the middle and add to the dangers of passing vehicles. Obviously they increase the hazard of skidding. Potholes and ruts are all too common sources of danger.

According to *Public Roads* for March, 1927, about half of the Federal Aid projects completed in the latter half of 1926 had a surface width of 18 feet, and nearly 23 per cent were less than 18 feet wide. Doubtless there are many situations in which 18-foot surfaces are justified from the standpoint of economy, but with ever-increasing speed it would seem as if 20 feet should be the minimum width for main roads. Almost equally important is the width of the shoulders, which should be ample to accommodate parked cars and to safeguard those which accidentally run off the pavement at high speed. An 8-foot firm shoulder is none too wide, and side slopes on embankments should be about 4 to 1, unless protected by guard-rails, to minimize the chances of overturning if cars run off. Where guard-rails are used, they should be of a type such as cable or mesh, rather than wooden rails, which may splinter and cause death or serious injury if forced into car. Deep ditches should be far from the pavement.

Comparatively few highways conform to the above widths, and still fewer do so for their entire length. The majority of bridges and culverts are little wider than the pavement, and are frequent causes of accident. The ideal situation would be to have all such structures as wide as the pavement plus the shoulders, and the present tendency is toward this ideal.

While considering the cross-section of the highway, another safety provision should be mentioned—a footpath or sidewalk. This is not a simple matter, because, to be entirely safe, walk-ways should be located beyond the shoulders and side ditches, and if they are to be used, their grades must be practically as uniform as that of the roadway. Even if built upon the shoulders, they would take pedestrians off from the pavement, and that is especially important when one considers the large number of children walking to and from school.

A minimum radius of 1,000 feet for curves is highly desirable, and there should be a minimum sight distance of 500 feet at all points, including hill-tops and intersections with highways and railways. There are hundreds, and probably thousands, of dangerous intersections which could be made safer at comparatively small expense, by removing obstructions to sight. It may be mentioned in passing that many railroads conduct rather elaborate poster campaigns to minimize crossing accidents, and then habitually spot box-cars so close to crossings that it is impossible for a motorist to see an approaching train until he is practically upon the track.

The danger of long, steep grades and of curves without proper superelevation and widening, where needed, is generally recognized, and these hazards appear to have been eliminated to a much greater extent than most of the others which have been mentioned. The use of standard warning signs is also becoming very general.

Super-Highways

There is a great deal of question, from a safety standpoint, as to the best arrangements of multiple-lane highways, meaning highways with more than two traffic lanes, and in the absence of a large volume of accident data, very dogmatic statements are hardly justified.

On highways where, at times of greatest traffic density, the travel is largely in one direction, a three-lane highway, with the three lanes clearly marked, may relieve congestion without being any more dangerous than, if as dangerous as, a two-lane highway, because overtaking vehicles in the direction of lighter traffic can enter the middle lane gradually and dodge back if a vehicle traveling in the opposite direction starts to enter the middle lane at the same time. There appear to be a few comparative accident

Two Main Phases of the Problem of Highway Safety

In submitting the accompanying suggestions to the National Safety Council at one of its public safety sessions in New York last month,* Professor Morrison pointed out that whether any given means of building safety into a street or highway is practical or not, depends upon various factors, the most important of which is usually the relation between the cost and the available funds. In conclusion, he summarized two main phases of the construction problem as follows:

"The first concerns ordinary thoroughfares, and here the problem is primarily one of putting into effect the principles which are already well known to most highway engineers but which are often neglected, usually through lack of funds or the absence of enlightened public opinion to support the spending of money for increased safety instead of for other purposes.

"The second phase involves the so-called superhighways, and especially those intended to accommodate very high speed traffic. Here we are confronted with a new set of problems to be solved, and mistakes in their solution will be tremendously expensive, not only in money, but probably in lives, personal injuries and property damage. Judging by what has already been done, notably in Italy, and by the plans which are being made by such cities as New York and Chicago, the day is rather fast approaching when motor speedways will be built right to the hearts of the largest cities, and much painstaking research will be needed to determine how to get the vehicles quickly and safely to their destinations, and what to do with them when they get there."

records which support such an opinion. On the other hand, with congested traffic in both directions at the same time, the danger of head-on collisions seems obvious, as there is no way to regulate traffic in the middle lane, and it is hard to see how a three-lane road could be used safely under such conditions.

Whether or not pavements carrying four or more traffic lanes should be divided in the middle, to increase safety, also depends largely upon traffic conditions. Certainly, if the volume of traffic is usually about equal in both directions, a divided pavement will be safer, with no danger of head-on collisions, but if traffic is predominantly in one direction in the morning and in the opposite direction in the evening, then both congestion and accidents may be less on an undivided pavement. In the case of a four-lane highway there may be more congestion on a divided than on an undivided pavement unless passing is permitted on the right, as well as on the left, side of overtaken vehicles.

It is to be hoped that, before long, definite data as to traffic flow and accidents upon multiple-lane highways, under various conditions, can take the place of speculation and opinions based upon limited observations. The cost of such studies is insignificant compared with the large sums involved in construction.

Intersections

When considering safety, the short distances included in intersections become as important as the long distances between them, and in many cases this is also true of economic losses due to congestion.

The importance of adequate sight distance has already been mentioned, and intersections of trunk lines with secondary roads should be protected with "stop" signs on the latter. The proper and improper use of automatic signals is too complicated a problem for discussion within the limits of this paper, even though they may be considered as construction items.

At important intersections, curved pavements are often built connecting the intersecting highways, so that turns can be made safely at comparatively high speeds and the situation at the main crossing will not be complicated by turning movements. In some instances rotary intersections can be used to advantage, but here again we are handicapped by a lack of adequate data upon which to base the most efficient design.

The safest intersection is, of course, a grade separation. These have been built in Detroit, Chicago and a few other cities, and the famous toll roads of Italy have no crossings at grade. Usually, the only real objection to a grade separation is the cost, so that, theoretically, one should be built whenever the annual cost of the installation is less than the annual cost of getting along without it. The solution of this problem would be one of simple arithmetic, except that the actual value of practically all the factors is unknown and must be estimated.

Looking at the matter as a purely economic one, we have on one side the annual interest, depreciation and maintenance costs of the structure, and on the other side the annual costs due to delays and accidents. To put a reasonable value upon each of these items would take careful study of each individual case and then an estimate as to future developments.

For instance, taking purely arbitrary figures, it may be assumed that the cost of a certain grade separation is $300,000, that it will be in use for 50 years (making the depreciation $6,000 per year), that the average interest during that period will be $7,500, and that annual maintenance and contingencies will be $1,500. The total annual cost, upon that basis, would be $15,000. If the value of time for each vehicle is estimated at the very modest sum of $1 per hour, and the average delay to each vehicle is 10 seconds, the annual cost of delays alone will be approximately equal to the annual cost of the structure if the combined traffic upon the intersecting highways is 15,000 vehicles per day. A study of the actual nature of the traffic, the delays, and the accidents, in any given case, might show that a much smaller, or much larger, volume of traffic would be required to justify an outlay of $15,000 per year, and, of course, this sum also might be much smaller, or much greater, in different locations.

There is no hesitation about spending thousands of dollars in attempts to save a few individuals lost at sea, or in a mine accident, or other disaster which is more or less spectacular, and immense outlays are made by the railroads, often under legal pressure, to place added safeguards around the lives of passengers, where accidents are few, so that it seems hardly logical to place the installation of a grade separation purely upon a basis of economic justification. However, the availability of funds is such an important factor that there seems little chance that such structures will be installed any faster than is warranted by economics alone.

Courtesy of the U. S. Bureau of Public Works

THE FAMOUS TOLL ROADS OF ITALY HAVE NO CROSSINGS AT GRADE

Railway Grade Crossings

As a safety measure, the elimination of railway grade crossings is, generally speaking, more important than the elimination of highway grade crossings, and we have discouraging reports that, in spite of the many separations being built, the number of grade crossings is growing larger instead of smaller. The situation would doubtless look much brighter, however, if it were measured in terms of some unit of hazard. It is not a highway crossing a railway which makes trouble, but a highway vehicle crossing the path of a train, so that the elimination of a crossing involving 50 trains and 5,000 vehicles a day may be as important as the elimination of a hundred country lane crossings of branch-line railroads. The relation is not a direct mathematical one of trains times motor vehicles, because the heavily traveled crossings are better protected, but certainly one trunk-line crossing eliminated and one wood-road crossing added does not leave the general situation unchanged, even though it may appear so upon official records.

Wide, smooth, level highways adjacent to railway crossings are extremely desirable, and, as previously stated, everything possible should be done to remove obstructions to a clear view of approaching trains.

Closely related to grade separations is the matter of pedestrian subways in cities. When they are used, there is no question as to their value both in promoting safety and in relieving congestion, but if they are not used, they represent merely a waste of money. Indications are that some subways are very successful and that others are almost complete failures, and sometimes there is a popular demand for more subways when those already built are not used. Careful observation of such installations should develop some valuable information as to the various conditions under which pedestrians will, and will not, use subways.

The Two-Century Influence of a Tree

More than two hundred years ago, Mr. Pepys wrote of the trees in the King's Park, in London, many of which preserve the general outlines and surfaces of the park against all suggestions of change, and indirectly influence the leading lines of miles of street . . . . Mr. Pepys' road is still in use, its grade affected, its breadth contracted, and its course deflected out of respect to a single tree.

—FREDERICK LAW OLMSTED, Sr.

The Management of Water-Works Business from the Executive Standpoint

By George H. Fenkell
General Manager and Chief Engineer, Department of Water-Supply, Detroit, Mich.

FOR the purpose of this discussion the business affairs of a water Department may be divided as follows: (a) the securing of funds at a low interest charge for capital investments; (b) the securing of funds for operation and maintenance, including depreciation; and (c) the meeting of fixed charges. To these should be added (d) the collection of engineering data and the maintenance of engineering and other records that can be used later as an aid in directing the work of the department.

With the foregoing in mind, it is believed that it is fair to state that the business of a water-works department consists in securing and disbursing the funds above mentioned and in the ways outlined, and in doing this in a manner that will meet the approval of at least a considerable share of the residents of the community.

Selection of Employees

The first essential element in a successful water-works department is in the employment of a staff of competent workers. The management of a privately operated plant is usually free in the selection of employees, and in the establishment of the salaries that will be paid, but in many municipally operated water-works but little attention has been given to the qualifications of the applicant when filling a position. Through the operation of a civil service department having adequate legal authority, and administered by business men who have had experience in employment affairs, it is possible to remove to a considerable extent the difficulties that prevail when employment is used as reward for political services rendered. The establishment of the civil service system, based primarily on the prevention of interference for political or religious reasons in the filling of positions and in making promotions and demotions, marks an important step in promoting efficiency in a municipal water department. The spirit of common devotion will also be improved through the adoption of a system of old-age pensions for employees.

Engineering Staff

A second subject of primary importance is the maintenance of an engineering force that will allow the design for extensions and improvements to be made well in advance of the time that these will be needed in operation. The weakest part of many municipal water projects is the engineering staff that is available for design. When a structure is needed that will require three years to build, with the work carried on in an orderly way, and which can be completed in one year as a rush order, it may be expected that there will be a saving of 25 per cent or more through the use of more leisurely methods, because the additional time will allow the development of better design, the material can be purchased to better advantage, and labor can be directed in a more economical manner. Even in a well-organized department it may be found impossible to solve each problem that arises in a satisfactory manner, and hence the employment of a consulting engineer or water-works specialist will become not only desirable but necessary if the best results are to be obtained.

The framers of a city charter do not usually contemplate its use as the basis of control for the formation of an organization and for the operation of a construction bureau to carry through to completion projects of exceptional magnitude. Many city charters, however, contain a provision which requires that a contract shall be awarded to the "lowest responsible bidder." The operation of this clause has been objected to by many engineers, but when all things are considered, the writer believes that this is a safe method of procedure to be followed by a municipality.

Purchases and Supplies

Through the use of a department or bureau of purchases and supplies it will frequently be found possible to effect substantial savings in the purchases of material. The director or officer in charge of this department has no sinecure. A disadvantage results from centralized purchasing of supplies because of the tendency that it produces for the engineers in the staff of the water department to become less well informed as to what material and equipment can be made available for use, but the gain through the use of such a department is much greater than the loss that it occasions. Many kinds of supplies that are used in a water department are of a bulky nature, but if purchases are made in quantity, and if advantage is taken of the low prices that prevail at those times when the manufacturers are eager for orders, substantial savings may be effected, provided adequate and well-located storage space has been developed.

Many well-built water-works structures will be long-lived; that is, these may be expected to continue in service for from 50 to 100 years or longer, and some of these, at least, will be abandoned or razed because of obsolescence rather than because of the effect of wear and tear. The municipally owned plant, because of this, has an advantage over the privately owned plant that operates under a limited franchise, for it can build more substantially.

The Business Problem

The management of a water plant is confronted with the engineering problem of furnishing an abundant supply of water for domestic, commercial and manufacturing purposes. To meet the requirements of each class of customers, it is necessary that the supply be free from water-borne disease germs, turbidity and mineral content injurious to boilers or manufactured products; that the pressures be adequate and continuous; and that the quantity available at every point be sufficient for ordinary as well as for fire prevention purposes. For each endeavor there is a resulting cost, and in the water-works business these are divided among capital costs, and charges for operation and maintenance. To insure the continued success of the undertaking, it is further necessary that the expenditures under each of these items be made as low as is possible and still comply with the principles of good engineering.

Metering

The principal source of revenue for the municipal water-works department will come from the sale of water; and the charges for water service may be based on measurement by meters, upon rates based upon the number and type of fixtures used, upon rental value of the property served, or a combination of two or more of these. The use of rental value as a measure in determining charges for water is used but seldom, if at all, in the United States. The use of meters has increased rapidly in the last few years, and while some cities still continue to make collections according to the flat-rate or assessment system, the fact remains that many communities are adopting the meter system as the most equitable for the consumers as well as the works, and of those that have adopted this method for determining charges, not one, as far as the writer knows, has returned to the flat-rate system after meters have once been placed in use. While the cost of operating a meter system may be as great as that of one without meters, it will usually be found that through the use of meters capital investments are reduced and water service improved. As the filtration of water increases its cost and its value, the installation of filtration plants tends strongly to bring about the early metering of the services supplied.

Methods other than by the use of meters are available for use for the reduction of waste and for determining the plans that should be used for strengthening a water system. Among those that are easy to employ are: (a) measurement of the supply through the use of venturi meters; (b) leak surveys by water taken from the hydrants and used to feed one block at a time through a hose line; (c) pitometer leak surveys; (d) surveys of the flow in large mains by the use of pitometers; (e) hydrant surveys to determine the amount of water available for the fire department at any point; and (f) the use of a number of pressure gages read hourly and located at several points in the distribution system.

Emergency Crews

No water department is so small that it does not need to have at least one emergency crew that can respond promptly when a break in a main occurs, for the broken main is the bane of the water-works management. It usually occurs without warning and without previous knowledge of the time or place where it will occur, and unfortunately the cause for the trouble can seldom be determined later. To maintain men in idleness, subject to call at all times but seldom responding to emergency calls, is uneconomical and will cause their undoing. A plan that has proved satisfactory in some cities is to divide the work of the garage crew into three shifts, to use the garage as an emergency station, and the auto repairmen and washers as emergency men for use only in time of serious trouble.

Water Rates

During the past few years there has been a marked increase in the cost of labor and material, but through economies that have been effected by efficient management it has not usually been necessary to increase water-rates in the same proportion. However, there has been a considerable increase in the cost of producing water, and this should be reflected through an increase in water-rates in order that the proper balance between capital and income may be maintained. This income should be sufficient to allow the department to operate well, to maintain it in good condition, to pay off annually at least a part of the outstanding debts, to meet the interest when it becomes due and the requirements of the sinking fund.

There is a great difference in practice in the methods employed in the determination of the water-rates in the different cities where meters are used. Some cities charge a uniform rate regardless of whether the quantity furnished is large or small, usually with a minimum charge. When the municipality owns the meters, a meter rental is also frequently charged. Some cities have a variable rate, depending upon the amount of water used by the consumer, and the use of a three-step rate is increasing. Service charges which will cover all or part of the unvarying expenses of water service are coming into more general use, as it is believed that this plan is fundamentally more just to the works and to the consumer.

Assessments

In addition to the funds that will be secured through the sale of water, additional amounts may be obtained through an assessment against the abutting property for the construction of the distribution mains. Collections through this assessment method have not been generally employed, for some cities lack the necessary authority to make such assessments, and in others, because of the slow growth of the system, the establishment of such a method for the securing of additional revenue is not justified. This plan for collecting a part of the cost for extensions is recognized as a reasonable one, and the funds that are collected are of substantial assistance in the financing of new projects.

Diversion of Funds

In the collection of income tax from employees of municipal plants, the United States Government has assumed that the function of the water department is proprietary rather than governmental. If the Treasury Department is correct in its ruling and the function of such a water department is proprietary, then it should collect from the city it serves its regular charges for all services rendered the municipality. This would include charges for fire service, for water furnished parks, fountains, municipal buildings, for street sprinkling and flushing, and for charitable institutions of all kinds. The department in turn would be expected to pay taxes the same as any private utility. It has been assumed by many that the free service rendered a municipality is offset in the department by freedom from taxation. It should be remembered, however, that there is a difference between the taxpayers and the water consumers, and, further, that water service that is rendered free is used with but little attempt to control its use and to reduce its waste.

Public and Private Ownership

The management of a privately owned water plant is concerned principally in maintaining the value of the property and in the payment of dividends. The management of a municipal plant is concerned with developing and operating the plant in the way that will best satisfy the citizens and water consumers and in turning back to the plant for capital investments the surplus which is the result of the economies effected through efficient operation.

As the greater number of the water plants in the United States are owned and operated by the municipalities that they serve, it may be inferred that inherent advantages are obtained by serving a community through a municipal department rather than by a privately owned company. While there is no intention to discuss here the complicated problem of private versus public ownership, the writer ventures to point out some of the advantages of each that affect the business of the departments.

Private management allows: (a) better control of employees; (b) the payment of salaries somewhat commensurate with the work performed, and hence the employment of those more nearly suited to fill important positions; and (c) prompter action for meeting new conditions of service.

The municipally operated department can: (a) secure funds at a low rate of interest; (b) operate with expenses for legal services and for litigation reduced to a minimum; and (c) build structures of a more permanent nature than would be possible for a company to construct that operates under a limited franchise.

Water Business Non-Competitive

There is no single item by which the management of the municipal plant can be judged. The business affairs of a water department differ from those of other public utilities and nearly every other kind of business, in that there are few new purposes for which water can be used. By way of illustration, reference may be made to electric light and power companies, and the gas companies, which have extended the use of their products into fields that were quite foreign to them a short time ago. A few years ago hydraulic elevators and water-driven washing machines came into limited use, but the amount of water used for these purposes now is very small. The cooling of the air in retail stores and theaters through the use of appliances requiring cooling water has been used to a limited extent, but with all of the methods that use water in new ways the amount required is almost negligible.

As a water department usually has a monopoly in the community which it serves, and as the new uses for its product are few, it does little advertising and maintains no sales department. In this respect it also differs from nearly every other kind of business. It is essential, however, that the department maintain the good-will of the consumers, and the only channels open for doing this are through the maintenance of the visible portions of the plant in a sightly condition, the rendering of good service and the publicity of its aims and endeavors. The reputation that the department enjoys will be no less due to the promptness and courtesy of employees and the speedy adjustment of its accounts and complaints, than to the excellence of its mechanical equipment and the adequacy of its supply of a wholesome product.

Records Valuable

There is little use in collecting and summarizing data unless some good use is made of them after they are collected. The records in the department are collected, preserved and summarized: (a) to make possible the prompt collection of all the monies due the department; (b) to determine when payments must be made and the amount of the bills that must be met, and to pay all bills when due; (c) to keep down the cost of plant operation and maintenance; and (d) to determine the future needs of the department in such a manner that the construction requirements will be met in the best and cheapest manner.

Financing of Sewer System

Many cities find difficulty in securing funds needed for essential improvements through the limitation established by law or otherwise. However, owing to the elemental need of an adequate supply of wholesome water, laws regulating the finances of a city are usually less restrictive with the financing of water projects than for other improvements. Principally because of this difficulty in securing funds, consideration has been given recently to the proposal that the portion of the sewer system that is concerned principally with the dry-weather flow be financed and administered by the municipal water-works. To what extent the sewer system would be so financed and operated would depend upon legal and financial restrictions of the communities in question, and also on local usage and municipal laws. With some, the entire sewer system would be included, while in others storm-water sewers would be excluded. Whether or not sewage treatment works would be included would depend upon local circumstances. In the establishment of tax rates, as well as the rates to be charged by public service corporations, the word "equitable" is used freely and without a realization that "ability to pay" is often the deciding factor. As the sewers that carry away the dry-weather flow operate in conjunction with, and are a necessary supplement to, the water system, and as most of the water supplied is removed through these sewers, and as the demand for sewer capacity is in almost a direct ratio to the amount of water used by the consumer, it appears reasonable that administration of the affairs of the sewer system should, in some cases at least, be joined with that of the water department. Objections to the adoption of such a plan would probably be raised by railroad companies which use large quantities of water for locomotive boilers, and by some others, but the number of these would be relatively few. While no general rules on this subject can be stated now, it seems quite certain that within the next few years this method of financing and operating sewerage systems will be given increasing consideration by the governing bodies in many cities.

Fire Protection

A well-operated water plant is a great asset to a community for a number of reasons that are apparent and which should be appreciated by the consumers. Its effect in accomplishing a reduction in fire insurance rates, or in maintaining low rates already established, is at present generally intangible. It is to be regretted that the fire insurance companies have not found it convenient to evaluate improvements needed for fire prevention purposes.

Excepting those that have given the subject careful consideration, few realize to what an extent the demand for fire protection service influences the design and cost of a water-works system. "Experience has shown that the cost of the portion of the water-works involved by fire protection service in this country generally constitutes from 60 to 80 per cent of the entire cost of the physical property in the case of communities having less than 10,000 population; 30 to 40 per cent in communities of about 50,000 population; 20 to 30 per cent in communities of about 100,000 population; and 10 to 20 per cent in the case of our largest cities," according to the Water-Works Manual, page 593.

Finally, the prosperity and growth of a city will continue to be contingent to no small degree on the excellence of the water-works system and the reasonableness of its water-rates. In the coming years it will be found that to maintain the works at a high degree of efficiency and to furnish water at rates that are consistent with the capital costs and other expenses involved, the ingenuity of the water-works management will be taxed to an ever increasing degree.

ACKNOWLEDGMENT.—From a paper read before the American Water Works Association.

City and Town Clerks of New England Organize

A MOVEMENT that has been under way for some time to effect an organization of city and town clerks in the New England States has resulted in the formation of the New England City and Town Clerks Association.

The first annual meeting of the Association took place in the State House in Boston, Mass., on October 6, a preliminary organization meeting having been held in the spring. A welcome was extended by Hon. Frederic W. Cook, Secretary of the Commonwealth of Massachusetts, and an address on the importance and dignity of the city or town clerk and the value of uniformity in legislation and procedure regarding many of the matters dealt with by these officials was delivered by Hon. A. Chesley York, Assistant United States District Attorney, of Medford, Mass.

An election of permanent officers was held, resulting in the choice of the following: President, Charles A. Winslow, Medford, Mass.; Vice-Presidents (one from each state), A. Edwin Smith, Portland, Me., E. B. Corley, Burlington, Vt., Algie A. Holt, Peterboro, N. H., John A. Gleason, Hartford, Conn., Joseph V. Broderick, Cumberland, R. I., and George A. Higgins, Andover, Mass.; Secretary, Jason M. Carson, Somerville, Mass.; and Treasurer, Arthur E. Roby, Concord, N. H.

The Association is expected to promote the best interests of the public service in which the city and town clerks are engaged, and to eliminate certain causes of confusion by working for uniformity of systems, forms, fees, etc.

The Study of Concrete Pavement from Core-Drill Records

By C. E. FOSTER

CONSTRUCTION ENGINEER, MICHIGAN STATE HIGHWAY DEPARTMENT

THE Michigan State Highway Department began to core-drill concrete pavements in 1922, the objects being to determine whether or not the proper thickness of slab was being secured. Since that time, one and sometimes two core-drill outfits have been operated by the Department during the greater part of each construction season. The equipment itself consists of a shot drill mounted on a truck. The principal items of the drilling outfit are a gasoline engine which operates a vertical shaft through a clutch mechanism to which is attached a cutting head. The cutting head is equipped with a hollow cylindrical cutting bit which, when rotated on the pavement with chilled steel shot as an abrasive, cuts out a core 4¼ inches in diameter for the full depth of the pavement. It takes from one-half hour to one hour to take a core from the road, depending upon the age of the specimen and the quality of the concrete. The cost of the operation is approximately $35 per day, including the rental of truck and drill; supplies, such as gasoline, oil, shot, etc., and the salary and expenses of the operator and helper.

The Routine

The organization and routine reports are very simple. The operations of the core-drill equipment are regulated from the central office at Lansing. At the beginning of the season an itinerary is laid out for the outfit, so that the various jobs may be core-drilled with a minimum amount of travel between jobs and as soon after the actual placing of the pavement as is practicable. It is important that the core be drilled soon after the placing of the pavement, since final estimates on paving projects are not paid until the thickness of the pavement has been determined by core-drilling. The operator sends a daily report to the central office, on which is shown the number of cores drilled, their locations, their condition, and their depths. With these reports at hand it is a simple matter to tabulate the data and show just how the job has been handled. This information is especially valuable when it is possible to core-drill completed portions of projects on which paving is still in progress, because there is then an opportunity, in case of variation in the thickness, to see that the new work is placed properly.

Object of Core-Drilling

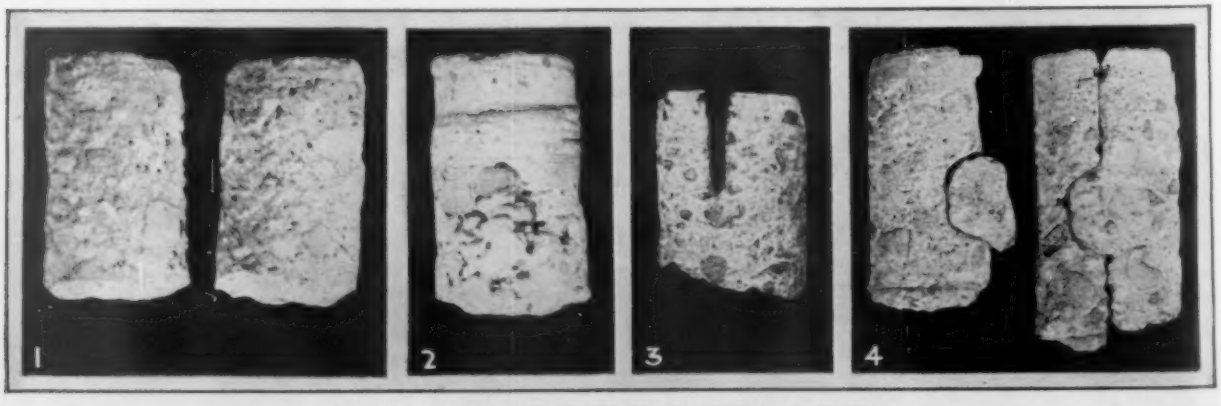
As previously stated, the original object in core-drilling was to determine the thickness of the pavement placed. In 1922 it was more of an object for a dishonest contractor to skimp on thickness of slab than it is at the present time, because at that time the contractors furnished the cement, which is the most expensive single ingredient going into the manufacture of concrete and which it was a supposed virtue by some to save, if possible. Since that time, however, the state has adopted the policy of purchasing and furnishing the cement; thus the incentive on the part of a contractor to save this material has been eliminated. There are very few highway contractors who are actually dishonest, that is, those who deliberately try to skin a job. There has been a decided improvement in the road building industry along this line brought about during the past few years by a change in attitude on the part of both contractors and engineers, the former adopting better business practice in their work, and the latter improving their specifications so that the work to be done is more clearly defined.

But engineers still have to contend with carelessness and lack of knowledge of what is required on even the best-managed jobs. It must be borne in mind that the construction of a concrete pavement involves the use of a large number of men arranged into an organization. The organization must work with speed or lose money. Under these conditions, carelessness in performing vital functions, affecting the life of the completed work, may easily become general and be fully as detrimental as premeditated crookedness. This is true in the face of the fact that the contractor may have the best of intentions.

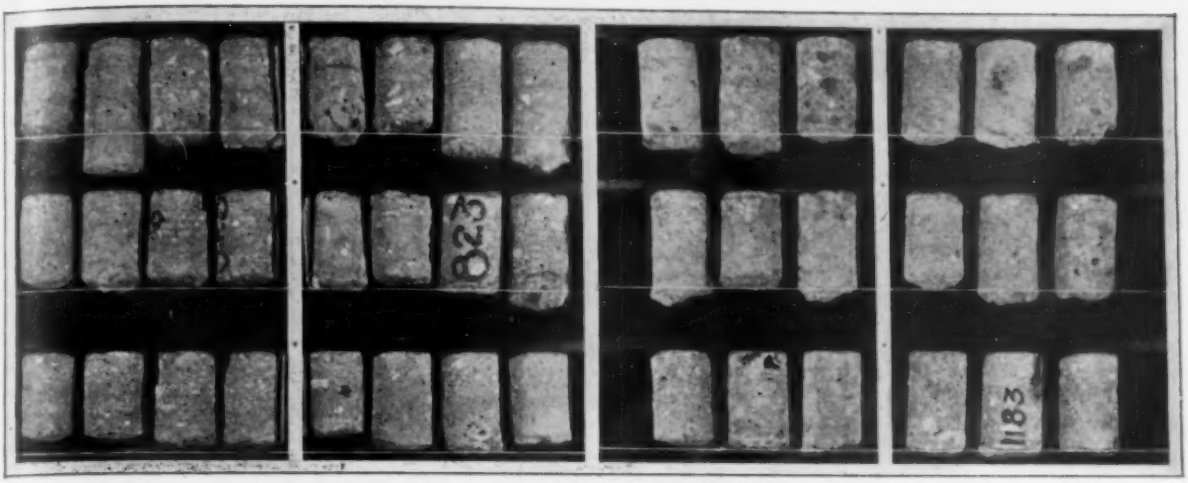
When core-drilling was first attempted, it was intended to eliminate thin pavement from our construction work. The results have been good, but occasionally a job is found that has gotten out of control, and, in cases of this kind, both contractor and engineer must be dealt with sternly. The specifications that govern thin pavement follow:

Pavement Thickness

"Tolerances in Thickness of Pavement—The pavement shall be constructed strictly in accordance with the dimensions shown on the plans. If proper methods are employed and reasonable care taken, the thickness should not vary more than ½-inch from the thickness shown on the plans. Variations greater than this will be considered due to poor workmanship and the following rules will govern rela-



TYPICAL CORES SECURED FROM CONCRETE PAVEMENTS
1. Porous mortar shown by cores. 2. Segregation. 3. A formed center joint. 4. A steel center joint



SETS OF CORES WHICH ILLUSTRATE GOOD AND POOR SUBGRADE WORK

The two panels at the left are of cores showing the uniformity of thickness of pavement illustrating careful subgrade preparation. The two panels at the right show poor subgrade preparation with non-uniform slab thickness

tive to replacing and paying for pavement not built in accordance with the plan dimensions:

"(1) Sections of pavement deficient in thickness more than one inch shall be removed and replaced by the contractor, at his expense, with pavement of the specified thickness, and the cost of the cement which was used in the section to be removed will be deducted from estimates to the contractor the same as spoiled cement.

"(2) When the average thickness of the pavement, exclusive of those sections more than 1 inch deficient in thickness, is less than the thickness shown on the plans, the unit price for payment shall bear the same proportion to the contract unit price as the square of the average thickness of the pavement constructed bears to the square of the thickness as shown on the plans.

"The thickness of the pavement will be determined by measuring the length of cores drilled from it. At least one core will be drilled within the limits of each 1,056 linear feet of pavement, at such point as the engineer may select. The average thickness will be determined for each mile of pavement, and the fraction of a mile when the contract is of such length that it cannot be divided into an integral number of miles. A unit price for each mile and fraction of a mile will be determined as specified above, and such unit price will be used as the basis of payment.

"The average thickness of the pavement shall be considered as the average of the lengths of the first core drilled from each 1,056-foot section, except that no length of core greater than the thickness shown on the plans plus ½-inch, and no length of core less than the thickness shown on the plans minus 1 inch will be included in the average."

Cores Furnish Lessons for Contractors

The contractor is furnished with a copy of the core record of his job, and aside from the penalty of thin pavement, there is a lesson which he may learn from a study of this record, if he but care to go into the matter. For instance, suppose the average thickness of the cores is ½-inch in excess of the plan requirement of 7 inches. The extra thickness figures slightly over 7 per cent of the thickness required. This percentage, translated into extra materials and labor of placing, is certainly not less than 5 per cent of the cost of the slab. The cost of this extra thickness is dependent upon the unit cost of the pavement placed, but a safe figure would be 5 or 6 cents per square yard, and amounts to approximately $600 per mile. The extra labor required to make the subgrade perfect should not exceed one-tenth of this sum.

In illustration of the foregoing remarks in regard to subgrade construction, the photograph at the top of the page shows a group of cores taken from a project on which it is evident that very careful subgrade control was maintained, and also what may be expected when very little, if any, care is taken in the preparation of the subgrade. The top of the cores in these illustrations is the surface of the pavement, and the white line across the bottom of the cores represents plan thickness of pavement.

Concluding the part of this study having to do with pavement thickness, it is obvious from the examples shown that it cannot be taken for granted that a uniform thickness of pavement will be obtained unless adequate and intelligent inspection is provided. When it is found that wide variations in pavement thickness exist, it must be borne in mind that the owner, whether state, county or city, had full power under the specifications to stop the faulty construction as it progressed. If this was not done, and the contractor required to proceed daily in accordance with the specifications, it must be admitted that the result obtained is a measure of the inspection provided. This fact alone is reason enough for employing only men who are fitted by training, experience, integrity and personality for inspectors at the mixer. It is absolutely impossible for the engineer to be at all points on the job all of the time and therefore it is the inspector upon whom falls the responsibility of keeping the engineer informed of the daily operations of the crew during the engineer's absence. Inspectors at the mixer, surely, should be well-chosen men.

Other Functions of Cores

Aside from pavement thickness, there are a number of other interesting features which may be studied from special cores taken from the pavement or from examination of the regular cores, such as segregation, thickness of motor coat, air and water voids, etc. Figures 3 to 6, inclusive, are cases in point.

Thus far, all that has been said relative to the study of concrete pavements from core records has been developed entirely from a visual inspection of the specimens. The facts which these individual specimens show will be left until the last and the important part of this study has been considered, which has to do entirely with the crushing strengths of the specimens.

Crushing Tests of Cores

Each year since 1922, a few cores from individual projects have been crushed to determine the strength of the concrete. In 1926 a larger number of specimens were tested and the results arranged in such a way that they could be studied. This work was continued on jobs completed during 1927 and the data for both years follow in the form of a series of graphs reproduced below

The first diagram shows the average strength of all the cores crushed during 1926, strength being plotted as abscissae, and age plotted as ordinates. It can be

noted that the average strengths fall into a fairly regular curve.

The second diagram shows the strength of individual cores on a typical project. It can be readily noted tht there are large variations in strength of the individual specimens.

The third diagram shows the strength of individual cores by age, selected from several projects for the purpose of studying the strengths of the individual specimens as well as the average strength in the entire age range. The heavy dotted line connects the average strengths at the various ages. The curve showing the average strengths in 1926 superimposed on these data indicates a very general conformity to the average of the previous year. The striking thing in connection with this graph, however, is the lack of uniformity of strength between individual specimens.

The fourth diagram is a study of the average strengths of cores of an average age of 205 days on 19 different projects. The strength range on these projects should be noted.

Results of Strength Tests

These are typical of the results secured by crushing cores. Before any conclusions are drawn, the facts should be briefly reviewed. First, it has been shown from the strength charts that there is a decided lack of uniformity in the strength of concrete on the individual projects, the difference in strength of individual specimens of the same being as much as 2,500 pounds per square inch. Second, on some projects it has been shown that the average strength of a group of specimens at two or three months of age is stronger than the average strength of another group of specimens much older. This is contrary to the behavior of carefully controlled laboratory concrete, which, under ordinary conditions, grows stronger with age. Third, it has been shown that there is a decided lack of uniformity in the average strength of concrete of the same age on a group of projects, the total range of difference in strength on the projects studied being upwards of 2,800 pounds per square inch. Fourth, visual inspection of the individual cores shows segregation of fine and coarse aggregate, porosity, and other defects.

When considering these facts, it must be remembered that the specimens tested are actual samples taken from the pavement. The crushing strengths, therefore, represent strength of the pavement—barring improper handling of specimens prior to testing, and natural errors in capping the cores and testing them. It should also be borne in mind that all of the materials which went into the construction of the pavements represented by these specimens, passed laboratory inspection and met the requirements of our specifications. The construction methods prescribed by the specifications were followed out as nearly as it is possible for different engineers to interpret the meaning of the specifications and apply the principles to their work. There is, of course, a human element in the application of these construction methods. But from the observation of many jobs in the field, it would appear that the average interpretation of these methods has been well within the intent of the specifications.

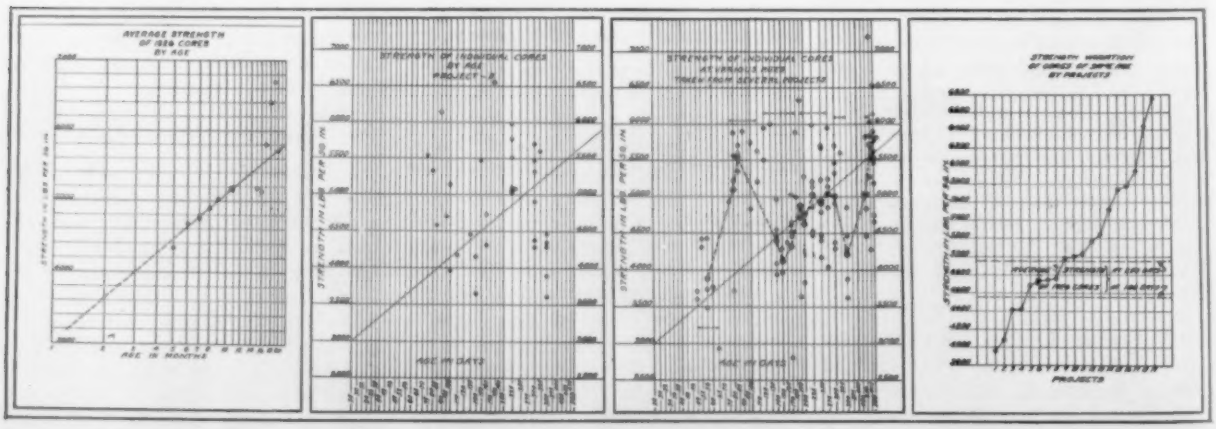
Volumetric Measurement Not Satisfactory

Granting that these facts are true, it must be admitted that, working under the old volumetric specification for proportioning concrete aggregates, the strength of the concrete cannot be predicted or controlled unless greater attention is given than heretofore (1) to the segregation of aggregates, (2) to the volumetric changes in the aggregate due to the presence of varying quantities of moisture, and (3) to the total quantity of water per batch of concrete.

In other words, to secure uniformity of strength on even a single project it must be possible to easily control the amount of fine aggregate, the amount of coarse aggregate, and the amount of water in each batch of concrete. It is possible to correct for varying conditions in aggregate when using the volumetric method of proportioning, but it is admittedly impracticable, since to secure good results, changes in batch size might be required several times daily, with consequent delay in operation of plant. It has been demonstrated that weight measurement of aggregates is practicable and flexible, and with this method of measurement, fluctuating conditions of aggregate and moisture cause much less disturbance of the total mineral aggregate in each batch. Adjustments in proportions are also easily possible, involving no more labor than is necessary to change the weights on the scale beam.

1928 Specifications Require Weighing of Aggregates

In view of the results of core strength tests, the Michigan State Highway Department specifications for 1928 paving provide for the proportioning of concrete aggregate by weight and accurate measurement of total water content. For the present, the proportions of cement, fine aggregate, and coarse aggregate will be based upon the characteristics of the materials themselves, in combination, such as to develop the maximum strength with a given cement content per cubic yard of finished concrete. Careful studies are being made of all available aggregates, and when these are completed and test results of field concrete made over a period of time, advantage may be taken of the data secured to effect economy by designing for a given strength.


AVERAGE STRENGTH OF 1926 CORES BY AGE
AGE IN MONTHS
STRENGTH OF INDIVIDUAL CORES BY AGE PROJECT "A"
AGE IN DAYS
STRENGTH OF INDIVIDUAL CORES AT VARIOUS AGES FROM SEVERAL PROJECTS
AGE IN DAYS
PROJECTS

DIAGRAMS PREPARED AS A RESULT OF EXTENSIVE STUDIES OF CONCRETE CORES

From left to right: Average strength of concrete pavement as shown by all core tests made in 1926. Strength of individual cores on a typical project, showing large variations in strength of individual specimens. Strength of individual cores by age, selected from various projects. Average strength of cores at the average age of 205 days on 19 different projects

Uniformity Through Accurate Field Control

Field research will also be conducted on a number of selected jobs for the purpose of determining just what may be expected in the way of uniformity by accurate field control, taking into consideration all the factors affecting the strength of concrete. Accurate control of proportioning and other field operations will be established and laboratory practice on the job applied to those operations which lend themselves to laboratory methods without adding unduly to the cost of the grading and concreting operations.

The study of core records also indicates a need for adequate and high-grade engineering personnel, equipped to handle both street and plant inspection, fairly and impartially and, last but not least, daily, so that there may be no regrets after it is too late to correct the conditions that may result in unsatisfactory work.

ACKNOWLEDGMENT.—From a paper read at the Annual Highway Engineering Conference at the University of Michigan, 1928.

Are Your Roads Ready for Winter?

WHILE spring maintenance includes repairing the damages of winter and fortifying the roads for heavy traffic ahead, fall maintenance involves much the opposite. The effects of traffic must be obliterated and a roadbed prepared for the rigors of fall rains, winter frost and spring thaws.

THIS DITCH WENT THROUGH THE WINTER FROZEN FULL, BECAUSE OF SIDE-HILL SEEPAGE AND A CLOGGED OUTLET

October is probably a better month than September to make preparations. Blading and dragging may be handled better during September, when the surface is liable to be dusty and hard. For both months, traffic has begun to ease off, leaving the roadbed clearer for the maintenance work. November is the month when the final work must be completed before frost puts an end to fall maintenance.

Separating Road and Water

What are the performance specifications for roads in winter? They should, if of earth or gravel, freeze up free of ruts and chuckholes, shed water well during surface thaws and remain reasonably safe and comfortable for winter travel, which is each year more nearly approaching summer traffic in volume.

In more than half of the states the spring thaw or spring break-up is still accompanied by road damages requiring huge sums to repair. To minimize these damages, surface and ground water must be made to part company with the road beforehand. This must be done in the fall.

Fall Maintenance

Cracks and joints, subject to traffic wear at all seasons, are vulnerable spots in winter. Progressive spreading and spalling is the penalty for neglecting to see that all joints are bituminous-filled in the fall. Open cracks admit water to the subgrade, which probably has too much moisture already. Sections of pavement may settle where fills have settled or slumped or become disrupted by lateral slides. Such places, while they may look fairly good in September or October, may be decidedly dangerous by spring. Patching or rebuilding these sections, as well as determining and correcting the cause, should be a part of fall maintenance plans.

If macadam surfaces have been given early-season patching and surfacing treatment, little remains to be done to them at the close of the summer. Edges, however, may have become frayed and will fare badly in winter if not patched. Thickening the edges and widening are probably desirable, but if funds are scarce, the work can be put off until late spring. Chuckholes need repairing and the contributing cause should be remedied, particularly if drainage is that cause.

Unsurfaced roads and gravel roads need little special attention—just constant maintenance. New gravel added during the summer has become fairly well compacted by traffic. If kept free from ruts and corrugations, gravel will freeze smooth, and that is one of the main objects of the patrolman during the football season.

Shoulders, Ditches and Drainage

The most important task of fall maintenance is not that of doctoring the road surface itself but of protecting it from water and frost. Shoulders need to be kept in smooth condition, like the traveled road, in the interests of safety to traffic in slippery weather. More important is the part they play in carrying off surface water, which they cannot do properly if deeply rutted.

Ditches must be opened, culverts must be reasonably free from sediment, field outlets must be ready to take away water. Unless these three are in good order, both surface water and ground water will give trouble through the rainy November, and rutted frozen roads will jounce the taxpayer through the winter. Then, in the first warm spell in the early

THE FOLLOWING SPRING THE ROADWAY WENT TO PIECES BECAUSE OF A SOFT SUBGRADE. PROPER STEPS TAKEN THE PREVIOUS FALL MIGHT HAVE PROLONGED THE LIFE OF THE ROAD

spring, the soft subgrade will go to pieces.

Past experience or present indications may point to the need of subdrainage to intercept side-hill seepage, drain a water pocket, or help stabilize a clay foundation. Sub-drains are needed most in the fall, winter and spring, and they cannot be installed in the latter two seasons. Consequently, it is a fall job that cannot be put off until falling temperatures freeze the ground.

There are certain maintenance jobs which must be done in the fall, with inevitable penalties for procrastination or neglect. On the other hand, a thorough job of preparation for winter pays dividends of better fall and winter road conditions, preservation of the road investment, and less reconditioning expense next spring.

The Duties and Powers of a Street Sanitation Official

By HARRINGTON PLACE

ENGINEER, DETROIT BUREAU OF GOVERNMENTAL RESEARCH

IN no two cities in North America is the organization of the street sanitation department, commonly known as the Department of Street Cleaning, the same. In each there are certain administrative differences and peculiarities of organization. Nevertheless, there are certain primary functions or activities common to all. These are: (a) street cleaning, including machine and hand brooming and flushing; (b) alley cleaning, including the removal of ashes and rubbish; (c) garbage collection; (d) snow removal in the North; (e) some form of disposal for all such waste. The following are not uniformly distributed as regular functions of street cleaning departments, but should be mentioned: catch-basin cleaning; weed cutting; and the grading and maintaining of unimproved streets.

From its very nature, most of this work is done by unskilled labor. The introduction of machinery is bringing about some changes, but only a small percentage of the labor necessary makes any pretense of skill. It is from the ranks of the unskilled laborer that the selection and training of the supervisory force of the street sanitation official's department must be made. Such training should be well considered and patiently given, and must be thorough.

Inadequate supervision is responsible for much of the weakness of street sanitation divisions. The first problem, then, is in training an adequate supervisory staff. The second problem is one of non-political administration. Despite the enlightenment claimed for them, most of our modern cities are yet unable to shake off the political habits of generations. Under our form of government, it sounds strange to say we should be better off if there were no politics. Admitting that we must have some, we may as well admit also that there have been times when we have had too much in our street sanitation organizations.

Until the activities of these departments can be put on a self-respecting basis and operated as intelligently and efficiently as those of any other department, street sanitation is going to be looked upon as one of the political "dumps" of our modern cities. Doubtless the need of a controllable man-power for political use has been one of the reasons why many cities have been slow to take up labor-saving machinery, cheaper transportation and modern disposal methods.

Additional Powers

In much of the work done by the street sanitation official he is handicapped by his inability to enforce certain ordinances by lack of police authority. First, many cities have ordinances regulating the house treatment of waste, requiring the segregation in separate containers of ashes, garbage, paper and miscellaneous rubbish. In Canada, where the population is rather homeogenous, it is doubted whether the inability to enforce this is as widespread and as serious as in the United States, where, because of a mixed population, and laxity of court procedure, the enforcement of such ordinances is out of the question, or very difficult. Owing to conditions of disposal at present, the non-enforcement of such ordinances is a serious handicap. The dumps are most offensive in the case of ashes and tin cans. Garbage is often dumped in alleys and mixed with everything else under the sun. Incineration which will permit mixed collection will make such a condition less serious, but, even with incineration, some segregation is desirable.

Snow Removal

In the northern cities, the inability of the officials in charge of snow removal to get at it, because of traffic, makes for expense and also congests the traffic the department is trying to expedite.

Police power used with judgment to control traffic until the snow job is done, would save money, not only in the actual performance of the work, but in economy of the time of the public. Without the backing of the courts, no authority can accomplish the desired ends in connection with segregation of waste of several sorts. Therefore, a considerable police authority should be delegated to the superintendent and to one inspector at least in every division of street sanitation work.

Uniform Records

The system of measuring everything in cubic yards means little. A cubic yard of rubbish may mean anything from 100 pounds or less to 1,500 pounds or more. The cost of moving a yard of anything means little until it is known how far it is moved, and whether it is of a definite class of matter rather than merely "rubbish."

Is it practicable to segregate costs of rubbish and garbage into collection or loading, transportation and disposal charges? If not, why? An exchange of information between different cities as to costs and methods is particularly difficult, because some cities use yards, some use tons, others loads, and none of them report mileage, and none give an idea of the topography or seasonal variations, and it is necessary for an investigator to spend several days or weeks before he can tell whether he is using the information properly.

For his own satisfaction, each sanitation official should have records telling clearly and exactly what the various operations of the different cleansing divisions are costing. These should be checked and rechecked week by week, and the official can determine whether his subordinates are on the job. It will also be possible to create a spirit of competition among the various subordinates, which invariably results in reduced costs. Without such data any budget preparation is a matter of guesswork.

Mechanical Equipment

The mechanical developments of the last quarter-century have done much for street sanitation. If there is any equipment that will save labor, it should be used, for, if it is worth anything, it will pay for itself.

Street sanitation superintendents cannot afford the time to take courses in mechanical engineering, but they can

study, observe and inquire and, if necessary, get the advice of men with practical ability in judging the comparative merits of mechanical equipment. They can set up a modest engineering office and install a young engineer to plan records on a technical basis at a remarkably small sum—and he will save it to the department.

Every municipal official owes it to himself and his community to get his money's worth. He should know enough of specifications to set them up in such a way that he can secure the machine or equipment to do his work best and cheapest, not forgetting operating and maintenance costs. This applies to everything that is purchased — automobiles, trucks, flushers, sweepers, shovels and brooms. With an able purchasing agent and the knowledge that can be acquired with application and study, the work of street sanitation will soon take on a new aspect.

Disposal Works

A rubbish dump is the ugliest creation of any civilization. These blots in the landscape ought to be so far away from everything that they will not be noticed, but that makes for a very long haul. In the location and design of disposal works, therefore, the greatest amount of accurate information on which to base plans should be secured. It is my opinion that if officials will learn first of all exactly what kinds of materials are to be hauled and how much of each, and what it costs to handle each operation, and then take up the study of different disposal methods, they will be in much better position to get what they need in disposal equipment and operate it more efficiently.

Education of Councils and the Public

The street sanitation official must do a vast amount of educating In the first place, there are the legislative bodies from which all of the material and equipment to be used must be secured. These bodies must be educated to all the needs and requirements of the department, and they must be kept informed of changes that make the requirements necessary.

Subordinates should be kept fully advised of all that the head of the department is trying to do, and should be instructed in proper ways of dealing with different types of citizens, as the same method of approach will not produce good results if used indiscriminately. New methods and systems should be thoroughly explained to subordinates, and problems should be discussed openly within the department by all the men who are interested in, or responsible for, their solution. Conferences at regular intervals should be a part of the routine of the division.

Finally, the taxpaying public needs a great deal of educating. No opportunities should be lost by the head of the department or his superintendents and foremen to talk with and explain to citizens at every chance meeting just what the department is trying to do and why it is trying to do it.

A certain amount of landscape work with grass, shrubs and flowers around the department yards and stations commands respect and raises the morale of the department. All yards, buildings and grounds should be kept neat and clean, and, as far as possible, really attractive to visitors.

ACKNOWLEDGMENT.—From a paper read before the Ninth Conference of the International Association of Street Sanitation Officials, at Toronto, Ont.

Saturday the Day of Slaughter in Baltimore

ANALYSIS by the Statistical Committee of the Baltimore Safety Council of reports made to the Police Department of that city, discloses the interesting fact that 19 per cent, or approximately one-fifth, of all traffic accidents there involving death or injury, occur on Saturday.

From January 1 to June 30 of this year, out of a total of 6,293 reported accidents, 1,194 occurred on Saturday, and out of 6,967 for the same period of last year, 1,320 were listed for that day of the week. The Saturday percentage of the total was the same in both years.

The peak hour for accidents, the analysis disclosed, has shifted from between four and five o'clock in the evening for 1927, to between five and six in the evening for the first half of 1928. The morning peak hour is between 11 and 12 o'clock.

Comparison of the figures for the first six months of this year with those of the first half of 1927, however, show a marked improvement in the Baltimore accident situation. The reduction of 674 for half of the present year is due mainly to the installation of additional traffic control lights by the Police Department and to the activities of the Safety Council, the Chamber of Commerce believes. Only 60 persons were killed during the first six months of this year in traffic accidents as compared with 82 for the same period of 1927.

Buffalo Plans $2,500,000 City Hall

THE proposed city hall for Buffalo, N. Y., to be built at a cost of $6,500,000, was brought one step nearer realization by the signing on September 28 of the architects' contract by Public Works Commissioner George F. Fisk. This contract, which had previously been approved by the City Council, is between the Commissioner and the three architects, who are George J. Dietel and John J. Wade, of the Buffalo firm of Dietel and Wade, and Sullivan W. Jones, of New York, former State Architect. It is so worded that the Commissioner has full power to approve of the various details at every step. Architectural plans are expected to be completed by March 1, 1929, and bids are to be advertised for two consecutive months thereafter. Meantime, Commissioner Fisk has appointed an advisory committee from the City Council to confer with him as plans progress.

PRELIMINARY DESIGN FOR BUFFALO'S NEW CITY HALL

Applying Modern Methods to the Selection and Promotion of Public Employees

THERE is no general recognition, either in the public service or in the commercial world, of the complexity of the personnel problem or of the need for an organization to give continuous attention to it, in the opinion of Fred Telford, director of the Bureau of Public Personnel Administration at Washington, D. C.

Instead, in a paper read recently before the round table on municipal management of the Institute of Public Affairs at the University of Virginia, Mr. Telford declared that "the prevailing idea in both fields as yet is to seek some panacea without giving the matter the attention it deserves."

In regard to the public service, he has found that the general fallacy is that competitive tests in selecting persons for entrance to and promotion in the service, constitute the solution. On the other hand, those interested in personnel administration in the commercial world, are strongly inclined to toy with such ideas as expressed by "industrial relations" and "leadership," according to Mr. Telford. "Consequently, in only a few public and private organizations, constituting a very small percentage of the whole number, the sort of attack on the personnel problem is being made which, while fraught with tremendous difficulties, offers hope of ultimate success."

Mr. Telford in his paper outlines the personnel problem in a comprehensive and interesting manner. He warns of the complexity of the matter in the very beginning, stating that "almost any activity with which human beings are intimately concerned is likely to be complex because, for better or for worse, men and women do not conform to any standard pattern."

Seeking to explain primarily the place personnel selection occupies in the rational scheme of personnel administration and then briefly to discuss what it is, Mr. Telford says in part:

"In the commercial world, there was really no general recognition of the fact that a personnel problem exists until the World War made ignoring it impossible. Less than three years ago, practically one-third of the large commercial organizations which replied to a questionnaire sent them, stated that they used no tests in selecting new employees—as if it would be possible to make a choice among those available without formal or informal tests of some kind. Approximately half of the remainder indicated that they used methods which were neither better nor worse than those probably employed by Adam and Eve when they had occasion to select their first servant.

"Essentially the same situation exists in the public service in the United States, though my rather extensive observation leads me to the heretical belief that progress has been greater here than in the commercial world. The conception of a personnel system which consists merely or almost entirely of a system of entrance and promotion tests, has been written in the state constitution of New York, for example. It provides that 'appointments and promotions in the civil service of the state and all civil divisions thereof, including cities and villages, shall be made according to merit and fitness to be ascertained, so far as is practicable, by examination, which, so far as practicable, shall be competitive.'

Seven Main Functions of Personnel Administration

"Quite a different conception of personnel administration in the public service, is written into the law passed by the Illinois legislature in 1895, providing for the adoption by cities in that state, by referendum vote, of a quite different system. This conception as written into that law and extended and improved in later laws as well as through administrative measures, is worth discribing briefly. As conceived today, personnel administration has for its object, the carrying out of seven large functions or groups as follows:

1. The preparation, adoption, and administration of a duties classification. This involves ascertaining and recording the duties of every position in the service; grouping together in one class under a common descripive title those positions sufficiently alike that they can be treated alike in handling employment matters; the preparation of specifications for each class of positions including a short definition telling what positions are to be included in and excluded from the class. . . .

2. The preparation, adoption, and administration of a scientific compensation plan which provides a schedule of compensation, normally with minimum, maximum, and intermediate rates, for each class of positions, together with a set of rules according to which it is to be administered. . . .

3. The selection, through suitable tests, of persons entering the service or promoted in it. These tests may be formal or informal, written or unwritten, competitive or non-competitive. . .

4. When vacancies occur, some method of getting at work and on the payroll, those who have been found best qualified through the tests previously given.

5. A group of functions dealing with employees in the service, including transfers, training new and old employees, leaves of absence, service (efficiency) ratings, hours of work, attendance, and, to some degree at any rate, working conditions. . . .

6. A group of functions concerned with the temporary and permanent separations of employees from the service, including lay-offs because of lack of work or funds, suspensions and other disciplinary actions, forced removals, demotions, and the retirements under a pension system.

7. A group of miscellaneous functions, including such matters as the checking and certification of payrolls by the personnel agency; the establishment and maintenance of proper relations with the chief executive, the legislative body, the budget authorities, organized and unorganized employees, operating officers in departments and institutions, representatives of the press, and the general public. . . .

"This conception of personnel administration, as far as I know, has never been put fully into effect in any public jurisdiction or commercial establishment in the United States and Canada. Nevertheless, as an ideal to aim toward, it is in the consciousness of a number of public and private personnel administrators. In such public jurisdictions as the states of New Jersey, Maryland, Wisconsin, and California, the counties of Milwaukee and Los Angeles, and the cities of St. Paul, Cincinnati, Milwaukee, Cleveland, Seattle, and Oakland, to mention only a few, marked progress toward attaining the ambitious goal outlined above has been achieved. Unfortunately, however, no such conception prevails in large parts of the public service. . . .

"The personnel administrator has available for use in personnel selection a number of measuring devices. These include the written test in the free answer and the short answer form; the performance test in which the person tested is asked to perform under the eyes of the examiner such tasks as are believed to be typical, with an appraisal of the performance by the examiner; tests of medical and physical condition, usually given by a physician; the appraisal of the education and the employment record of the person tested; and the appraisal by means of an interview of personal traits considered of significance, such as dress, manner of speech, bearing, and attitude toward life and work. In addition, in promotion tests, credit is sometimes allowed for length of service and usually an estimate of success in performing lower-grade work is included.

Difficult to Measure Ability

"These different kinds of tests vary a great deal in value. Some of the measuring instruments are so crude as to represent an attempt to measure the length and width of the top of a desk with a yardstick not divided into inches or feet. Included in this category are the appraisal of education and employment record and the appraisal of personal traits through the interview. Other measuring instruments are more refined.

"It is very difficult, however, to determine the worth of either individual tests or a combination of tests because of the lack of any criterion against which to measure. Careful investigations show that the best formal tests available, when used in selecting persons for any class of position, weed out those obviously lacking in essential qualifications with considerable certainty; that they are almost, though not quite so reliable, in discovering persons of outstanding ability; and that for others, in whom neither ability nor lack of ability stands out, the measurements are so uncertain that results 40 per cent better than chance are unusual and results from 10 per cent to 12 per cent better than chance, are probably typical. Even so, it should be remembered that similar results cannot be produced by any other known method of personnel selection."

Enforcing Tax Liens

Improved Methods Would Reduce Delinquency and Help Solve the Problem of Uncollected Taxes on Real Estate

By WELLES A. GRAY
ASSISTANT DIRECTOR, MUNICIPAL ADMINISTRATION SERVICE

THE problem of how to enforce most efficiently the payment of taxes is one that is ever with a city's financial officials. Uncollected taxes mean a loss in current revenues and a possible deficit. The following year this may mean, possibly, an increase in the tax rate and a protest from the taxpayer. As yet the most satisfactory method of enforcing the payment of taxes is through the sale of tax liens, but practices throughout the country vary widely, and are, in many instances, not in conformity with the best methods.

A nation-wide survey of this problem has recently been made by Carl H. Chatters, City Auditor of Flint, Michigan. The practices in forty-two governmental units, either cities or states, in as many different states, were studied by Mr. Chatters, and the results of this study are incorporated in a pamphlet, "The Enforcement of Real Estate Tax Liens," just published by the Municipal Administration Service.*

That the problem of uncollected taxes is a pressing one is without question. Mr. Chatters cites the results of a survey conducted in 1927 by the Philadelphia Bureau of Municipal Research regarding uncollected taxes in twenty-three of the larger cities of the United States and Canada. To quote from the pamphlet:

"This report shows that seven of the largest cities in the United States had tax delinquencies greater than 8 per cent at the end of the fiscal period. For the fiscal period ending June 30, 1925, Washington, D. C., had $2,409,405 in uncollected taxes of the current year, and New York City, $34,794,822. Real estate tax delinquencies increased 557 per cent in the state of Ohio from 1913 to 1925, while the amount of taxes levied increased only 227 per cent."

Four Classes of Tax Sale Laws

The first part of the pamphlet is devoted to a description of the results obtained from the survey of local practices regarding the collection of delinquent taxes throughout the United States. The author groups existing tax sale laws into four general classes as follows:

"First, the most common practice is to sell tax certificates and permit redemption for a fixed period, after which a tax deed is issued. Second, the state or county automatically becomes the purchaser of delinquent tax liens. The interest thus acquired is held for a fixed period and then liquidated by a sale of the property or the lien created by the tax. Third, the tax lien is foreclosed by legal process without any sale of certificates or liens. Fourth, in some jurisdictions tax certificates are sold and a fixed period of redemption allowed, after which the lien is enforced by foreclosure proceedings similar to those used for the foreclosure of mortgages."

An example of each of these types is given in the appendices. Special mention is made of the methods used in Washington, D. C., and New York City, whose procedures are of interest as variations from the other types.

"The sales held by Washington, D. C., differ from all others in respect to competitive bidding. If there is more than one bidder, the competition is on the basis of a surplus. The buyer offering the largest surplus is considered the purchaser. This money is deposited in the Treasury of the United States and when redemption is made by the owner the surplus is returned to the tax lien buyer without interest.

"New York City enforces the collection of taxes in a manner somewhat different from all other cities. The tax lien bears interest at 7 per cent per annum and is sold when delinquent three years. The lien is sold at public auction to the person bidding the lowest rate of interest, not exceeding 12 per cent. The purchaser obtains an instrument which is legally defined as a *Transfer of Tax Liens*, which operates as a first mortgage on the property and entitles him to receive interest at the rate bid on the amount of the lien."

Interest Rates and Tax Deeds

A table, reprinted here, gives in detail the provisions of the laws enforced on this subject throughout the country. A brief discussion of some of the more important details, however, may not come amiss at this point. Mr. Chatters points out many extremes of variations:

"Interest rates during delinquency vary from 5 per cent to 25 per cent per annum. Some tax sales are held the day following delinquency, others four years later. Redemption from sale is unknown in several places, but in New Jersey, unless foreclosed, this right endures for twenty years. The cost of redemption one year after sale in Michigan is 100 per cent penalty plus $5; in Allentown, Pa., the tax buyer receives no profit if redemption is made. The tax purchaser in some places gets a deed valid against all flaws in procedure leading up to the sale; in other places he gets merely a prior lien to the property."

In the Interest of the City, the Taxpaper and the Buyer of Tax Titles

Improvements can be made in most states and cities in methods of collecting delinquent taxes. The City Auditor of Flint, Mich., on whose recent intensive study of this problem the accompanying article is based, summarizes his recommendations as follows:

1. **Tax procedure should be based on a carefully planned calendar, with the shortest duration of time, consistent with the public good, between the date of levy and the final disposition of the lien.**
2. **Taxes should be payable in two installments with a high rate of penalty added at delinquency.**
3. **Adequate notice should be given delinquent taxpayers.**
4. **Tax certificates should be sold late in the fiscal year for which the taxes are levied.**
5. **Competition at the tax sales should be based on bidding down the rate of interest on the certificate.**
6. **The purchaser of a tax certificate should enforce his lien by foreclosure proceedings following the general practice for mortgage foreclosures.**
7. **The tax certificate may be foreclosed one year after sale and must be foreclosed within three years or become invalid.**
8. **Adequate protection should be given the worthy poor and those delinquent through misunderstanding or misinformation.**
9. **The tax deed issued at the foreclosure sale should be evidence of a valid title.**
10. **The tax sale should consolidate all existing municipal liens and add subsequent liens to the certificate first sold.**
11. **Municipalities should purchase tax liens only when private interests fail to buy them.**
12. **All administrative acts relating to tax procedure should be mandatory.**

*Carl H. Chatters, *The Enforcement of Real Estate Tax Liens*, 51 pages, The Municipal Administration Service, 261 Broadway, New York. 25 cents.

TAX LIEN LAWS

A. Cities

Name of city	*Period of delinquency before sale*	*Penalty or interest during delinquency and prior to sale or enforcement of lien*	*Enforcement of tax lien*	*Period of redemption after sale or foreclosure*	*Cost of redemption*	*Kind of title acquired and when it is passed*
Birmingham, Ala.	Four months	8% per annum	Sale of certificates	Two years	15% per annum and $1.00	Tax deed two years after sale
Hot Springs, Ark.	Two months	25% penalty and costs	Sale of certificates	Two years	10% per annum	Tax deed two years after sale
Denver, Colo.	Three months	15% per annum	Sale of certificates	Three years	2% per month first 6 months 1½% per month next 6 months 12% per annum thereafter	Tax deed
Wilmington, Del.	Six months	5% per annum	Sale of certificates	One year	20% and costs	Good one year after court confirms sale
Augusta, Ga.	One day or more	10% and 50¢ costs	Sale of certificates	One year	10% on cost of sale	Title at time of sale and absolute ownership after one year
Springfield, Ill.	Five months	1% per month to May 1 2% after June 1	Sale of certificates	Three years and three months	12% each six months	Tax deed at end of redemption period
Fort Wayne, Ind.	Three months	6% penalty	Sale of certificates	Two years	10% during first six months and 5% each additional six months	Tax deed two years after sale
Kansas City, Kan.	Three years and four months	15% per annum	Sale to county when first delinquent and at end of three years and four months by foreclosure	None	None	Tax deed which is absolute when confirmed in chancery court
Lexington, Ky.	Five weeks	10% penalty and interest at 6% per annum	Sale of certificates	Two years	10% penalty and 1% per month interest	Tax deed from commissioner of finance two years after sale
Springfield, Mass.	One year or less	½% per month for three months and then 8% per annum on amounts over $200	Sale of certificates	Two years	8% interest per annum plus fees and costs	Absolute title through foreclosure
Fargo, N. D.	Two months		Sale of certificates	Three years	9% interest per annum	Tax deed three years after sale
Manchester, N. H.	Six months	10% per annum	Sale of certificates	Two years	12% interest per annum and costs	Absolute title two years after sale
Rochester, N. Y.	One year and seven months	½% each ½ month for 5½ months and then interest on the whole sum at 10% per annum	Foreclosure sale	None	No redemption	Deed at time of foreclosure
Oklahoma City, Okla.	Ten months	15% per annum	Sale of certificates	Two years	18% interest per annum plus fees and taxes	Tax deed two years and sixty days after sale
Pittsburgh, Pa.	Within three years	2% penalty and ½% per month interest	Judgment and sale of property	One year	10%	Absolute title one year after sale
Allentown, Pa.	Within three years	1% per month until lien is filed and then ½% per month	Judgment and sale of property	One year	Fees of sheriff and prothonotary. No interest or penalty for purchaser	Absolute title one year after sale
El Paso, Texas		10% penalty plus interest at 10% per annum	Judgment and foreclosure	Two years	Twice the sale price	Sheriff's deed which becomes absolute at end of two years
Spokane, Wash.	Eleven months	12% per annum	Tax certificates and foreclosure of judgment	None	None	Certificate holder may foreclose three years after sale
Bluefield, W. Va.	One year	10% per annum	Sale of certificates	One year	Interest at 12% per annum	Tax deed is given at end of year but this is not good unless followed by suit to quiet title
Milwaukee, Wis.	None	None	Sale of certificates	Nine years	Maximum of 10% per annum and minimum of 5%	Deed may be issued three years after sale and becomes final six years later
Kenosha, Wis.	Four months	2% penalty and interest at 1% per month	Sale of certificates	Nine years	Interest of 10% per annum	Deed may be issued three years after sale and becomes final six years later
Salt Lake City, Utah	Twenty days	1% per month	Sale of certificates	Four years	Penalty of 3% and interest at 1% per month	Tax deed is given but title is never absolute except through suit to quiet title

The law regarding these tax deeds is particularly unsettled:

"There is one line of cases which lays down the proposition that the purchaser at a state or county tax foreclosure sale takes title free from all liens. These decisions are based principally on statutes which state the preference to be given liens for taxes. There is considerable authority which even gives a title to a tax sale purchaser superior to that of a prior mortgagee; and many jurisdictions hold that the sale of property for taxes of one specific year is an abandonment of claim for taxes of all previous years. Another line of cases, however, favors the view that the sale of taxes does not free the property from liens for other taxes nor does it cut off prior vested rights, whether acquired by mortgage, dower, homestead or contract."

As a result of his investigation, Mr. Chatters recommends a number of provisions which should be included in the statutes dealing with the collection of delinquent taxes. In making these recommendations the author has looked at the problem from three points of view, those of the city, the taxpayer, and the buyer of tax titles. The city wants prompt payment of taxes; the taxpayer wants his rights protected, and does not want to be subjected to unusually severe penalties; the buyer of the tax title is desirous of getting interest on his investment, if the property is later redeemed, and a clear title, if it is not. The recommendations, therefore, include provisions which reconcile these interests, so far as is possible.

A Tax-Procedure Calendar

Among the most interesting of these is a suggested calendar or procedure for the assessment, levy, and collection of taxes. While this calendar assumes the fiscal year of a city to begin July 1, inasmuch as that is the most common date, it is easily adaptable to cities whose fiscal years begin on other dates.

SUGGESTED PROCEDURE OR CALENDAR FOR THE ASSESSMENT, LEVY, AND COLLECTION OF TAXES

Assumed Fiscal Year from July 1, 1928, to June 30, 1929

March 1, 1928. The day prescribed by law for commencing the assessment of real property. All property shall be assessed as of this date.

April 30, 1928. The assessment of property for the following fiscal year shall be completed.

May 1, 1928. The board of review or board of tax appeals shall meet from May 1 to May 14 to hear and adjust any complaints against the assessments as made by the assessing officer.

May 15, 1928. The budgets of all municipalities for the fiscal year shall be completed and the tax rate established.

June 20, 1928. The treasurer or tax collector shall start to mail tax statements to all property owners.

July 1, 1928. The first installment of year's taxes shall be due at par.

August 15, 1928. The first installment of year's taxes shall be delinquent and a penalty of five per cent added plus interest at the rate of one per cent per month or fraction thereof.

January 1, 1929. The second installment of year's taxes shall be due.

February 15, 1929. The second installment of year's taxes shall become delinquent with a penalty of 5 per cent to 10 per cent and interest at 1 per cent per month or part thereof computed on the second installment. If the first installment remains unpaid also, the same penalty and interest will apply on the total un-

TAX LIEN LAWS

B. States and District of Columbia

Name of state	*Period of delinquency before sale*	*Penalty or interest during delinquency and prior to sale or enforcement of lien*	*Enforcement of tax lien*	*Period of redemption after sale of foreclosure*	*Cost of redemption*	*Kind of title acquired and when it is passed*
California	Sold to state at once and to individuals after five years	10% first six months 20% second six months 30% within two years 40% within three years 45% within four years 50% after four years	Sale of state's interest to individuals by selling certificates	None after sale by state to an individual	None after sale to an individual. After sale to state, redeemed as in column three for five years	Tax deed only is given by state at time of sale to an individual and title must be established by adverse possession or suit to quiet title
Idaho	Sold first to county and after four years to individuals	10% per annum	Sale of land at public auction	No redemption after sale by county	None after sale by county	Tax deed is given at time of sale by county
Louisiana	Six months	20% penalty	Sale of land at public auction	One year	20% and costs	Tax deed which the law states shall be received by courts in evidence as prima facie valid sale
Maine	Five months	6% per annum	Sale of certificates	Two years	10% per annum plus fees	Treasurer's deed is issued two years after sale
Michigan	Two years and four months	4% fee and ¾% per month penalty	Sale of certificates	Two years	First year after sale 1% per month; second year after sale twice the sale price plus $5.00	Tax deed may be applied for one year after sale. If redemption is not made within two years after sale, the tax deed is effective having the same standing as a quit claim deed
Minnesota	Six months	10% for first three months and 5% more for rest of period	Sale of certificates	Three years	1% per month	Tax deed three years and sixty days after sale
Mississippi	Two months	10% penalty	Sale of certificates	Two years	25% damages plus accrued taxes with 5% interest plus clerk's fees	Tax deed giving absolute title is issued two years after sale
Missouri	One year	1% per month	Foreclosure and judgment	None	No redemption	Absolute title at time of sale
Montana	Fifty days	5% penalty and interest at 1% per month	Sale of certificates	Three years	1% per month	Tax deed is issued three years and thirty days after sale
Nebraska	Six months	10% per annum	Sale of certificates	Three years	12% per annum	Tax deed after three years and two tax sales
New Jersey	Six months	7 to 9% optional with municipality within these limits	Sale of certificates followed by foreclosure	Purchaser can foreclose right of redemption after two years. If he does not owner may redeem for twenty years	Interest at not more than 8% per annum. The rate is reduced by competitive bidding	Absolute title is acquired by foreclosure of the tax certificate
Nevada	Six months	3% per month	Sale of certificate	One year	15% penalty and costs	Absolute title at end of year. Statute waives all technical and clerical errors of officials
New Mexico	Forty-five days	5% penalty and interest at 1% per month	Sale of certificates	Three years	1% per month	Tax deed is issued at end of three years having same effect as quit claim deed
New Mexico (Alternative method)			Suit and foreclosure as in mortgage proceedings	Nine months	1% per month	Nine months
North Carolina	Four months	1% first month, 2% additional for second month, 1% additional for each successive month	Sale of certificate followed by foreclosure as in mortgage proceedings	Three years	20% per annum for first year and 10% thereafter until 18 months after sale. Interest is then reduced to 6% per annum	Sheriff's deed at time of sale
Ohio	Four years	10% penalty and 8% annual interest	Foreclosure proceedings	None	No redemption	Sheriff's deed at time of sale
Oregon	Six months	3% penalty and interest at 1% per month	Sale of certificates	Three years	1% per month	Lien is foreclosed through county court same as mortgage
Rhode Island	Three weeks or more	12% per annum or less	Sale of land at public auction	One year	20%	Deed giving all title held by original owner, but free from all encumbrances if proper notices have been given
South Dakota	One year and one month	1% per month	Sale of certificates	Two years	Not more than 12% per annum which may be reduced by competitive bidding at the sale	Treasurer's deed giving absolute title in fee simple subject only to liens of the state or county
Wyoming	Four weeks	15% per annum	Sale of certificates	Three years	3% penalty, 12% interest per annum and $1.00 fee	Tax deed is issued three years after sale
District of Columbia	Ten months	1% per month	Sale of certificates	Two years	10% pe annum plus recording fee	Tax deed is issued at end of two years after sale upon payment of all taxes due on the property

paid taxes, including the penalty and interest accrued on the first installment.

April 1, 1929. Delinquent tax list shall be published in the same newspaper as the legal notices of the municipality's governing body.

May 1, 1929. Tax certificates shall be sold for all delinquent taxes for the current fiscal year. The cost of the certificate shall be the amount of taxes, accrued penalties, and interest.

May 1, 1930. The purchaser of the tax certificate for 1928 taxes may apply to the circuit, chancery, or land court for foreclosure of the lien created by his tax certificate.

June 1, 1930. The court shall hear the petition for foreclosure and order the sale if no defense is offered.

July 1, 1930. The foreclosure sale shall be held and a tax deed issued by the clerk of the court which ordered the sale.

September 1, 1930. All right of redemption from tax sale shall be barred except for fraud, previous payment of taxes, or illegal assessment.

July 1, 1931. All right of redemption from tax sale shall be barred.

July 1, 1932. All tax certificates for the 1928 taxes which have not been foreclosed shall be set aside by order of the court which ordered the sale. Such information as is necessary shall be given the court by the tax collector or treasurer, and the public prosecutor or city attorney shall represent the owners of the lands whose properties are encumbered by tax liens not foreclosed.

It will be noted from an examination of the calendar that taxes are to be payable in two installments. The object of this provision is to make tax payments more convenient for the taxpayer. In this connection the author cites a recent recommendation of a special tax commission of Baltimore that tax collections can be facilitated by establishing branch collection offices in the various banks throughout the city, and providing for "tax savings clubs" similar to the Christmas and vacation "savings clubs" now so widely in vogue.

Penalties for Delinquency

Moderately severe penalties for delinquency are recommended. When the first installment of taxes becomes delinquent, a penalty of 5 per cent should be added, plus interest at 1 per cent a month. When the second installment becomes delinquent, "the penalties on the first installment should become part of the tax and a penalty of 5 per cent to 10 per cent added to the total taxes when due, whether it be the first install-

ment plus penalties, the second installment alone, or both." In addition, interest at 1 per cent a month should also be charged as before. "The penalty and interest rate suggested are high enough to encourage prompt payment, and low enough so that the municipality cannot be called a Shylock. These rates also have the sanction of use in many states and municipalities." (See table.)

Mr. Chatters points out, in this connection, that moderately severe penalties tend to lower the percentage of delinquency:

"An examination of tax delinquency in twenty-four cities, including twenty-one of the twenty-five largest cities in the United States, shows that San Francisco and Los Angeles, having the second and fourth lowest rates of delinquency, respectively, impose 15 per cent upon the first installment as soon as it becomes delinquent, and 5 per cent on the second when it becomes overdue, together with an additional 5 per cent upon the first if unpaid at that time. Minneapolis and Duluth, in first and fifth places, respectively, impose penalties of 5 per cent plus 1 per cent per month on the first installment and 10 per cent on the second."

Adequate notice should be given taxpayers, for in this way it is felt that delinquency through neglect or misinformation may, to some extent, be eliminated. At the same time, the procedure seems fairer to the taxpayer. Notice, therefore, should be given the taxpayer before his taxes are due, and, after they have become delinquent, notice of delinquency should be given. When the property is sold for unpaid taxes, notice should be given thereafter for a period of two years, in order to give the owner a fair opportunity to redeem. Notice by personal service, prior to the foreclosure sale, should also be given to all interested parties.

Speeding Up the Tax Sale

It is recommended that the tax sale be held within a year from the date the taxes become delinquent:

"There seems to be no valid objection to a sale at such an early date, because it will cost the taxpayer no more for penalties after the tax sale than it did before. From the standpoint of the tax collecting agency there can be no objection to such a sale. It will not only bring in the cash at an early date, but will enable the accounting officer to adjust his tax records before the end of the fiscal period."

In support of this recommendation the author cites the experience of Des Moines, Iowa, and Detroit, Michigan:

"For the fiscal period from July 1, 1926, to June 30, 1927, the tax levy of Detroit was $71,381,645.61. Tax collections amounted to $66,853,425.55 and tax sales held in June, 1927, brought $3,585,256.87. This left unpaid and delinquent, as of the end of the fiscal year, $879,960.20, or about 1.2 per cent of the year's levy. In Des Moines the 1927 tax sale was held in December, 1927, and all but a fractional part of one per cent of the taxes had been collected before December 31, 1927, either through voluntary payment or tax sales."

In contrast to the experiences of these cities, he describes the situation in Ohio and in New York City, where the tax sales are not held until several years after the taxes have become delinquent.

"In Ohio tax sales are not held until taxes are delinquent four years. This may account for the fact that in 1925 there was delinquent in taxes on real and personal property, $26,447,288.90 out of a total levy of $261,444,876.11. New York City does not dispose of its tax liens until after they have been delinquent for three years. This is, then, a contributing factor to the high rate of delinquency for the 1925 fiscal year. The total levy for that year was $328,374,984 and the uncollected taxes $37,794,822, or 10.6 per cent. Statistics would seem to suggest the efficiency of the tax laws requiring tax sales to be held soon after the tax becomes delinquent."

The method of competition at a tax sale should be by bidding down the interest rate. This is recommended as more fair to the taxpayer, and as encouraging competition. Furthermore, it costs the state or city nothing, and is more in harmony with the present trend in many states.

After the lien is sold, the property owner should have one year to redeem. That is, the lien cannot be enforced until one year has elapsed. This enforcement should be by a process similar to that for the foreclosure of mortgages. Furthermore, in order to clear titles, a lien must be enforced in three years or become invalid. Proceedings to invalidate liens should be instituted by state authority, through the county or district attorney or public prosecutor.

Protecting the Worthy Poor and the Purchasers of Liens

In order that these methods of enforcement may not be too harsh, provision should be made for protecting the worthy poor. This can be done by the state, county, or city taking over the lien and deferring collection. At the same time the interest rate should be lowered.

As to tax deeds and their value as evidence, Mr. Chatters recommends that the deed be prima facie evidence of the following facts:

"First, that the property was subject to the tax assessed and that the assessment was made in the manner required by law. Second, that the taxes were not paid before the issuance of the deed. Third, that the property had not been redeemed from sale. Fourth, that the property was sold for taxes, interest, and costs as stated. Fifth, that the grantee in the deed was the purchaser or his assignee. Sixth, that the sale was conducted in the manner required by law. Such a deed given after judgment and foreclosure would stop all efforts to set it aside except for fraud, previous payment of the tax or non-liability of the property to be taxed."

Purchasers of liens should have their interests protected as to valid title and loss of principal and interest. It is quite often the case that conflicting liens jeopardize the rights of the purchaser. The wrong lien may be sold first. Liens may be sold to several different parties. Therefore:

"A tax collection procedure, under which all tax liens against one piece of property should be consolidated at the time of sale, is recommended. The unpaid taxes for state, county, school, and municipal purposes as well as special improvement taxes, should be disposed of in one certificate. Such a practice would eliminate the confusion which handicaps the state and the individual when several deeds are issued against one piece of property for one year. The consolidated sale . . . coupled with a statute making all successive liens part of the oldest outstanding lien, would do much to eliminate tax title troubles."

At the same time, the state should grant the purchaser the return of the amount bid, with interest at six per cent per annum if the sale is set aside for flaws in the tax procedure.

The final recommendation—and one of the most important—is that the procedure for the enforcement of real estate tax liens should be made mandatory upon and not discretionary with the tax collecting officials:

" . . . whenever taxes become delinquent, the liens must be sold. If officials may hold the sales when they please or not hold them at all, the matter of enforcement may be used as a political tool. The friends of the administration may be able to let their taxes go delinquent for years before any sale is made.

"On the other hand, tax officials may not care to take the trouble to conduct such a sale. This is well illustrated in a letter received by the author from a taxing official of a Tennessee county. It says in part as follows: 'The law states that all delinquents of each year shall be offered for sale at the same time, which is almost a physical impossibility. . . . There has been no sale of delinquents by chancery court for years. If it is paid, we look upon it more as a pick-up.'"

At the end of the pamphlet are several valuable appendices. These include a number of illustrative tax laws, a sample ordinance for protecting the worthy poor, discussions as to the law of real estate tax liens, and a bibliography.

Aerial Highways and Their Marking

By D. C. YOUNG

THE Department of Commerce, with the publicity aid of prominent air travelers, has gained wide reaction to its plea that every city and town air-mark its name with roof signs on prominent buildings, indicating also the direction and distance to the nearest airport. The proper marking of aerial highways is a great aid to the establishment of air transportation. Fortunate indeed is the pilot if he finds his course dotted with conspicuous and legible roof or lawn signs. The lighting of such airway signs, strongly urged by the Department of Commerce, is obviously as necessary as the sign itself. Roof signs, primarily important as supplements to ordinary landmarks in the daytime, when lighted at night form an illuminated map while every natural landmark is obliterated by darkness.

City officials or civic and business organizations contemplating the erection of roof or lawn signs will therefore be interested in the following information pertinent to sign visibility, legibility and construction.

Factors to Be Considered

The distance at which a sign can be read in the daytime depends upon the size and shape of the letters, their spacing, and the degree of contrast between the letters and the background. Chrome-yellow letters on the customary black roof background, as recommended by the Department of Commerce, make a practical color combination which proves easily legible. A semi-mat finish paint is recommended.

Letters painted directly on the roofs of flat-topped buildings are likely to become covered with dirt and soot, and in winter with snow. Where such conditions exist, and also on gravel or pitch roofing not suitable for painted letters, it is suggested that letters made of wood or galvanized iron, mounted on steel or wooden supports, be used, thus raising the sign a foot or more above the roof. Signs made of baked porcelain-enameled metal are enduring, collect dirt slowly, are easily cleaned, and do not require painting. On the other hand, sloping roofs are less likely to collect dirt or snow, but the sign is effective only in one direction if the slope is more than 30 degrees. Two signs should therefore be used, one on each side.

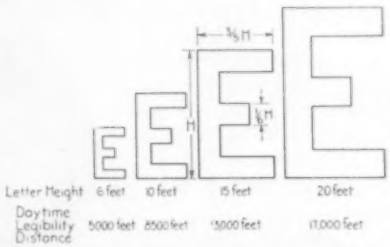


CHART OF LETTER PROPORTIONS

The larger the letters the farther the sign will be legible. Letter heights of less than 6 feet are not recommended. The width of the letter stroke and the space between letters are also factors which affect the readability of a painted sign. Desirable proportions of the letters are as follows:

Minimum letter width . . . 3/5 of the height
Width of stroke . . . . . 1/6 of the height
Minimum space between letters . . . . . 1/4 of the height
Approximate length of sign—Height of letter × number of letters.

While a sign as a whole may be visible at a considerably greater distance than shown, the eye can distinguish between two strokes of a letter only when they are separated by 1 minute of arc, which corresponds to 3½ inches for each 1,000 feet. On account of the foreshortening of the letter when viewed obliquely, the apparent separation of strokes is reduced, and the legibility distance is reduced accordingly. This effect is shown graphically in Fig. 1, which indicates the sphere of legibility for a 6-foot letter at different viewing positions. Letters as large as space permits should be used, since they can be read farther in bad weather, when the sign is needed most. The arrow, used to indicate the direction to the airport, will give a clearer indication of direction if it consists only of a barb and straight shaft—the enlarged head unmistakably indicating the direction to follow.

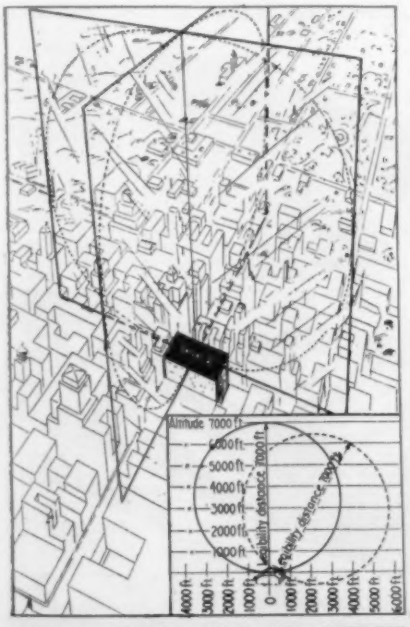


FIG. 1. LETTER SIZE AND VIEWING ANGLE DETERMINE THE LEGIBILITY DISTANCE TO A GREAT EXTENT

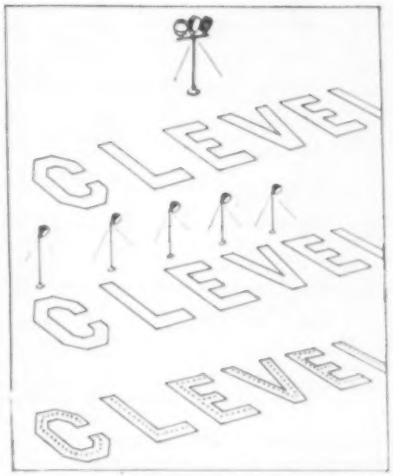


FIG. 2. LIGHTING METHODS: TOP, FLOODLIGHTS; CENTER, ANGLE REFLECTORS; BOTTOM, EXPOSED LAMP OUTLINE. EACH TYPE HAS ADVANTAGES

Signs Must Attract Attention

Since a pilot at a height of 2,500 feet sees the horizon about 65 miles distant, he has within his range of vision an area of more than 7,000 square miles. Within an angle of 45 degrees from straight down, he surveys with fair discernment an area of about 10,000,000 square feet, and unless he circles purposely he has only 40 or 50 seconds in which to locate a sign the area of which may be only 500 to 2,000 square feet. In other words, the pilot has about the same problem of noticing a sign as one has in scanning a full-page advertisement in the newspaper for 40 seconds and expecting to find a certain item among several hundred or perhaps a thousand items.

For that reason airway signs should be made as large as possible to attract attention, and should be located on the most prominent buildings or roofs which stand out sharply. Observations have revealed that a sign will be effective if located on a large lawn. The green or brown grass in the spring or fall of the year provides a suitable background to make the sign readily conspicuous. The chance of seeing a sign increases with the number of signs in any given district, as well as with their prominence. While one or two roof signs suffice to air-mark

TABLE I—Number, Size, and Location of Floodlighting Projectors Required for Painted or Cut-Out Letter Signs of Various Sizes*
(Unit having approximately 30-degree beam spread recommended)

Letter Height (Feet)		Length of Sign—Feet						
		25	40	60	80	100	120	140
6	Number of Floodlights*	2	2	2	.....	.....	.....	.....
	Size of Lamp	500-watt	750-watt	1000-watt	.....	.....	.....	.....
	Cover Glass	40° Spread Lens	40° Spread Lens	40° Spread Lens	.....	.....	.....	.....
	Location	1 at each end	1 at each end	1 at each end	.....	.....	.....	.....
10	Number of Floodlights*	.....	2	4	4	6	.....	.....
	Size of Lamp	.....	1000-watt	750-watt	1000-watt	1000-watt	.....	.....
	Cover Glass	.....	40° Spread Lens	40° Spread Lens	40° Spread Lens	40° Spread Lens	.....	.....
	Location	.....	1 at each end	2 at each end	At top (See Fig. 5)	At top (See Fig. 5)	.....	.....
15	Number of Floodlights*	.....	.....	4	6	8	10	.....
	Size of Lamp	.....	.....	1000-watt	1000-watt	1000-watt	1000-watt	.....
	Cover Glass	.....	.....	40° Spread Lens	40° Spread Lens	40° Spread Lens	40° Spread Lens	.....
	Location	.....	.....	At top (See Fig. 5)	At top (See Fig. 5)	At top (See Fig. 5)	At top (See Fig. 5)	.....
20	Number of Floodlights*	.....	.....	.....	8	10	12	14
	Size of Lamp	.....	.....	.....	1000-watt	1000-watt	1000-watt	1000-watt
	Cover Glass	.....	.....	.....	Light Stippled	Light Stippled	Light Stippled	Light Stippled
	Location	.....	.....	.....	At top (See Fig. 5)	At top (See Fig. 5)	At top (See Fig. 5)	At top (See Fig. 5)

* An additional projector is required for lighting the arrow.

a small town, a city of reasonable size should have one or more signs in every section of the city.

Lighting Requirements

There are several methods to be considered in lighting airway signs, as illustrated in Fig. 2. The problem involves exactly the same considerations as the lighting of large poster boards or the design of exposed lamp signs, the principles of which are well established. Although the essential difference is that the air sign is horizontal instead of vertical, the same rules apply with regard to choice of lighting equipment, location for uniform coverage of the area, and proper lamp size for effective brightness.

Where the painted sign is lighted either by floodlights or by angle reflectors, the illumination should be of the order of 15 foot-candles over the entire surface.

Since the lighting result will be much the same with either floodlighting or angle reflector equipment, the choice between the two will depend on relative costs, considering specific conditions of installation and maintenance.

The exposed-lamp type of illuminated sign (outlining the letters with a row of small lamps), can be installed very economically, and because of its brightness is undoubtedly the most effective method.

Suggestions for suitable lamps and lighting equipment needed for the various methods of lighting follow:

Floodlighting the Sign

A floodlight having a 30-degree beam spread is well adaptable to this use. A typical unit is shown in Fig. 3. Since every sign is rectangular, a spread lens may be used to advantage to spread the light in such a fashion that the beam shape corresponds quite closely to the shape of the sign. A shield or hood should be used above the projectors to cut off stray upward light which otherwise would interfere with clear viewing of the sign.

In order that the beam may cover the area, the projectors should be mounted 10 feet above the sign and about 5 feet back from the edge. Projectors located at the two ends of the sign are suitable for signs up to 60 feet long. Signs longer than this can be lighted more uniformly from projectors grouped at the sides.

FIG. 3. FLOODLIGHT UNIT

The arrow, with its legend of miles to the airport, will require an additional projector, which can usually be mounted on the same structure that supports the other projectors.

Fig. 4 illustrates the method of floodlighting a sign from projectors at

HOW VARIOUS LIGHTING METHODS WOULD APPEAR IN PRACTICE

Fig. 4. Smaller signs can be floodlighted by projectors located at ends of sign. Fig. 5. For larger signs more uniform distribution of light is obtained if floodlights are placed at sides. Fig. 6. Angle reflectors should be mounted along top of sign. Fig. 7. Exposed lamp signs attract attention and can be constructed inexpensively, as shown in lower right corner of sketch

each end; Fig. 5 shows a larger sign lighted by two groups of projectors at the side. Obviously, the amount of light, and consequently the wattage, required to light a sign to a given brightness, will be proportional to the area of the sign. Table I gives the number of projectors, the size of lamp, and the type of cover glass recommended for signs of various heights and lengths.

Lighting with Angle Reflectors

Although the initial cost of angle reflector equipment for sign lighting is relatively low, a greater number of units is

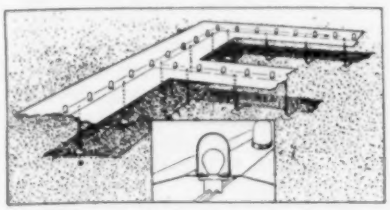


FIG. 8. CUT-OUT LETTER MOUNTED

required, and consequently the amount of wiring necessary is somewhat greater compared with floodlights. The maintenance cost may also be somewhat greater, but a factor offsetting this is the fact that, should one lamp burn out, fair coverage is still possible from the remaining units.

When using angle reflectors, the conventional method employed for the lighting of bulletin and poster boards is satisfactory. This consists of mounting a single row of units along one side at the top of the letter in Fig. 6. The reflectors should be mounted a foot or so from the edges of the letters; the relations between the mounting height and spacing of reflectors and wattage per reflector, are given in Table II.

Additional units to illuminate the arrow and mileage number, should be installed in accordance with the recommendations in Table II.

Lighting with Exposed Lamps

The exposed-lamp type of sign has the advantage of great brightness and therefore attracts attention to a greater degree than reflected light signs. A failure of one or several lamps does not seriously impair the effectiveness of the sign. A further advantage of the exposed-lamp sign is that it is effective at night even though the painted background is obscured by dirt or snow.

In outlining letters with exposed lamps, the lamps can usually best be located along the center line of the strokes of the letters. An exposed-lamp sign is not dependent upon the background for its nighttime effectiveness and, if it were not for the requirement of daytime service, no painted letter background would even be necessary.

An exposed-lamp sign can be constructed very inexpensively simply by following the painted letter strokes with lengths of conduit containing sockets a foot apart. Much of the cost of an ordinary electric sign is in the steel framework construction necessary to support the sign vertically against extreme wind pressure. Flat on a roof, however, only the skeleton of conduit is necessary. This conduit can be fastened to the roof at intervals with strap iron. Where this is impractical, the conduit can be strapped to narrow wood or metal stringers and the whole framework superimposed on the painted sign and bolted down. The conduit, stringers, and sockets would of course be painted chrome-yellow so as to be an integral part of the letter stroke when seen in the daytime.

Fig. 7 illustrates the construction of a simple exposed-lamp sign as described above. The same principle applies to signs made up of letters cut out of wood or metal instead of being painted directly on the roof. Fig. 8 suggests the construction of a sign with letters formed of galvanized iron or porcelain-enameled steel. The slightly sloping sides tend to shed dust and dirt, and, being set up above the roof, the sign is effective even with a considerable amount of drifted snow.

TABLE II—Lighting with Angle Reflectors

Letter Height (Feet)	Distance from Edge of Letters (Feet)	Mounting Height Above Letters (Feet)	Spacing Between Units (Feet)	Size of Lamp Recommended (Watts)
		Units along top side only		
6	1	4	6*	100
10	2	6	9*	200
15	3	8	12*	300
20	3	10	15*	500

* To determine the number of reflectors required divide the length of sign by this spacing, in addition 2 or 3 reflectors will be needed to light the arrow.

The lamp sockets should be spaced 12 inches apart along the letter strokes. To prevent corrosion and serious deterioration of socket parts, it is recommended that the lamp and socket be protected by a clear or light-yellow glass hood. These hoods and holders are readily available and provide a fairly dust-tight and water-tight housing for the lamp and socket.

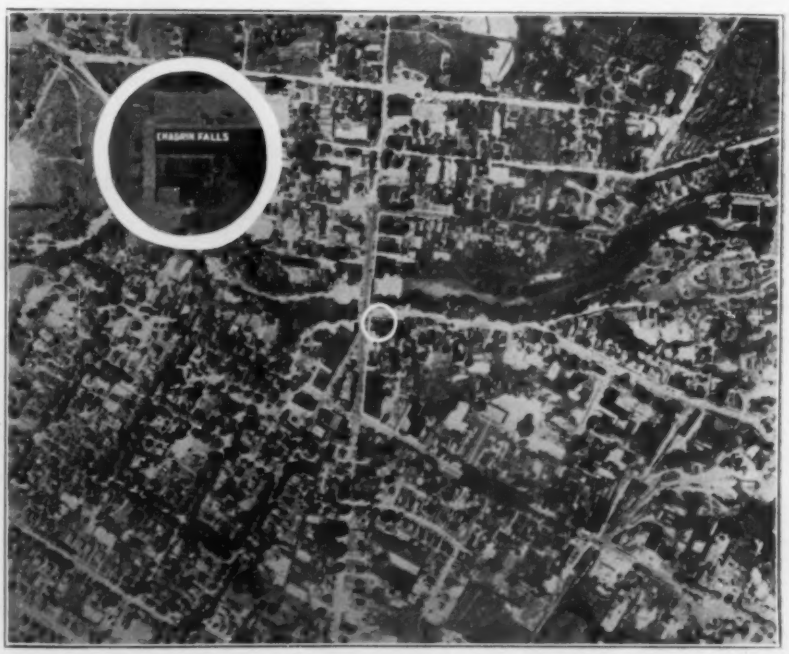
TABLE III—Legibility Distances for Signs of Various Sizes and Lamping

Letter Height (Feet)	Lamp Watts	Maximum Legibility Distance (Feet)*			
		4 Letters	6 Letters	8 Letters	10 Letters
6	10	2700	2800	2900	3000
	15	2600	2700	2800	2900
	25	2500	2600	2600	2600
	40	2400	2500	2500	2500
10	10	5000	5100	5300	5400
	15	4800	4900	5100	5200
	25	4500	4600	4800	4900
	40	4400	4500	4600	4700
15	10	8000	8300	8400	8600
	15	7800	8000	8200	8400
	25	7400	7600	7800	8000
	40	7100	7300	7500	7700
20	10	11200	11600	11700	11900
	15	10800	11200	11500	11600
	25	10400	10800	11000	11300
	40	10100	10400	10700	10900

* Normal atmospheric conditions assumed.
A 12-inch spacing of lamps is recommended.

The choice of the size of lamp to be used is governed by the two factors of attracting power and legibility. In general, 10- and 15-watt lamps will be satisfactory in dark districts, and, in fact, a sign using 10-watt lamps can be read at greater distance than when larger lamps are used. But the use of larger lamps will produce a brighter sign which will command greater attention, and this factor is of importance in locations adjacent to brightly lighted streets or near other advertising signs. Table III shows the legibility distances of signs when various sizes of lamps are used.

The drawings and photographs used in conjunction with this article have been supplied by the National Lamp Works of the General Electric Co., Cleveland, Ohio.



DISTANT VIEW AND CLOSE-UP (IN INSET) OF SIGN AT CHAGRIN FALLS, OHIO

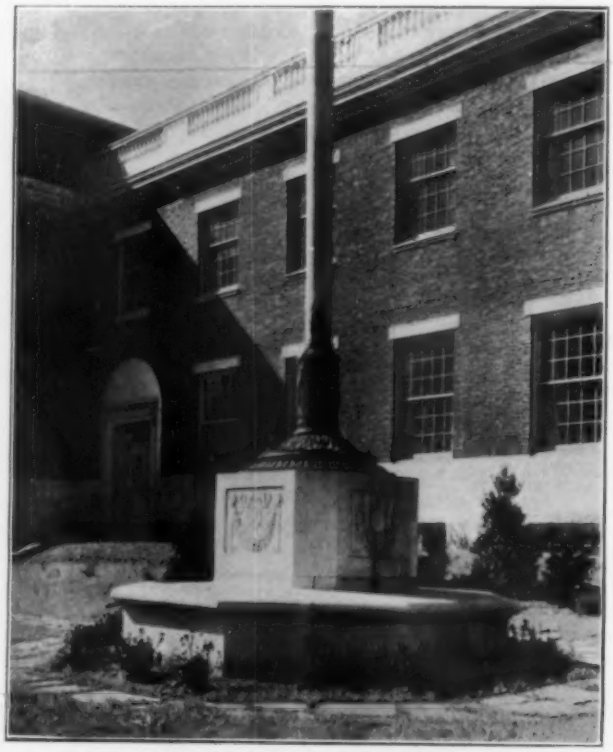
Good Design in Ornamental Flagpoles

A FLAGPOLE with a well-designed base is an asset to the town square, the village green, the city's park or parkway, or is an appropriate completing touch to a public building. There are some excellent examples here and there over the country, notably the pair in front of the New York Public Library, those at Columbia University, before the Court House at Arlington, Mass., and at Duluth, Minn. Others are being erected and still others will be erected, since civic art has become a subject of importance in American cities and there has come a general impulse to add the completing touch of beauty in the form of civic accessories everywhere; since, now, ten years after the war, communities here and there in considerable number are still casting about for appropriate memorials; and since in still other communities a new desire has arisen for the commemoration in some permanent public way of civic benefactors.

Many such may well decide that they can do no better than to erect an ornamental flagpole. It may cost little or cost much. The two accompanying illustrations are, perhaps, at the opposite ends of the financial scale of such undertakings. Yet each meets the requirements of its case admirably. Each has beauty, good taste, and a harmonious relationship with its setting. The one was designed by the architect and built by the construction company of the school building to which it is an adjunct. Its cost was about $1,500. The other was conceived by artist and architects working together to create an appropriate symbolic expression of a city's gratitude to its heroes of the World War. Its cost was $45,000.

The average community will want a flagpole at a cost somewhere between these two amounts. And because it is not always clear to the community, or the committee, as to just how to proceed with such an enterprise, it will not be amiss to give some of the details of these two. The one was designed in the office of Ernest Sibley, Architect, Palisade, N. J., as a part of the complete scheme for the Orange High School, Orange, N. J. In proportion, in the materials used, in its decorative scheme, it is in perfect harmony with the charming Georgian structure, the facade of which it graces, giving emphasis to the decorative detail there. According to figures supplied by the Nelson-Pedley Construction Co., of Philadelphia, builders of the school, and here published through courtesy of the architect, this cost was divided as follows:

Flagpole and trimmings	$ 300
Bronze base	825
Cast stone for base	284
Excavation and concrete foundation	100
Total	$1,509



THE ORANGE, N. J., HIGH SCHOOL FLAGPOLE

There is essentially a symbolic significance about this form of civic art which gives it interest for the designer, whether he be an architect, as in the above instance, or a sculptor working in collaboration with architects, as in the case of the structure below

THE PLAINFIELD, N. J., FLAGPOLE

The same piece of work might cost considerably more or less elsewhere, according to local conditions. Such an accessory might with perfect appropriateness be placed in front of an already existing building, or might be made possible by community enterprise as an accompaniment for some new or proposed public building. In either case a commemorative tablet could be set into the base, or otherwise made a part of the design.

The flagpole at Plainfield has an entirely different history. It was designed by the New York architectural firm of Helmle and Corbett, and its bronze sculptural base was executed by Gaetano Cecere, eminent artist, Fellow of the American Academy in Rome. Since the piece was intended to embody and symbolize the spirit of those of Plainfield's young men who fought in the war, neither money nor time was spared in its acquisition. Not satisfied to get the services of artists of the first grade, the city invoked the aid of the National Commission of Fine Arts at Washington, which body exercises the function of advising upon

the location of statues, fountains, and such other objects erected under authority of the Federal Government, and the selection of artists for the execution of the work, and which also acts unofficially, when invited to do so, as in this case, as consultant to states or cities. It is the highest authority on art matters in America, services of which are available to municipalities and to semi-public organizations in those municipalities. Its chairman is Charles Moore.

A circular issued some time ago by this Commission contained suggestions as to first steps to be taken by the community or committee having a monument or other form of civic art in prospect. Seek advice of some one trained in the arts, it is urged,—someone qualified to act as adviser in a number of important matters, including the location, the kind of art, and the artist. Competitions, it is suggested, are sometimes imperative for the selection of an artist, and the adviser should be able to draw up the program and conduct the competition. In case of a competition for a sculptor who could design, for instance, a creditable flagpole such as the Plainfield memorial, the community or its art adviser can get practical help from the National Sculpture Society, 14 East 40th Street, New York, which has formulated methods for conducting such contests. The American Federation of Arts and the American Society of Mural Painters have also outlined procedure for competitions.

Two Notable American Art Commissions

CITY HALL, New York, contains the finest collection of historical American portraits in the city and one of the best in existence. It includes ninety portraits of presidents, vice-presidents, governors, mayors, and other "men who have been outstanding figures in their generations, and who have made an impression on the history of their times." With a few notable exceptions these portraits are their only public memorials.

In addition to its historical value, the collection bears an important relationship to the beginnings of American art by American artists. The portrait of George Washington by Trumbull, and portraits by Vanderlyn, Peale, Sully, Morse and Inman, afford distinctive examples of a developing American school which, by the second quarter of the last century, had raised New York to her primacy as an art center.

The City Hall building itself has for more than a century ranked among the most beautiful buildings in the country, and certainly among the most distinctive, standing as it does at the very threshold of the nation, where it welcomes our most distinguished foreign visitors, and gives them their first impression of American hospitality, American government, American architecture, American art, and American taste.

The Art Commission of New York City

The art treasures of the City Hall are prominently featured in the annual reports of the Art Commission of New York City for the years 1926-1927, recently issued together and marking the thirtieth year of the Commission's life. But New York has many other art treasures, some old, some new. Some idea of the value of these may be derived from one statement alone taken from the publication; that is, that art and architectural projects at a total estimated cost of $92,000,000 were submitted to the Commission during the two years reported upon. Only once before in the Commission's history had this amount been exceeded in a like period. The aggregate for 1923-1924 was $119,500,000. This included the unusual amount of over $50,000,000 for schools.

The brief survey of the Commission's thirty years of activity is both interesting and significant. In its beginning the body was looked upon askance, being considered by many merely as an interesting experiment in civics. It is true that Boston already had a commission created in 1890, with the limited power of passing upon works of art coming into possession of the city; and Baltimore had a similar body created in 1895. But the Art Commission of the City of New York, created by the Greater New York Charter in 1898, was the first of its kind and scope to pass upon the designs of public buildings as well as works of art erected upon city property. Its admirable policy of assistance rather than obstruction, and its cordial cooperation with the heads of other city departments as well as with artists and architects, has contributed to its importance in the city's life; at the same time it has provided a powerful example to lesser cities in different parts of the country which have during the past few years begun to arrive at realization of their needs for some sort of control over their public art and architecture.

The Commission is able to report a gratifying improvement in the designs submitted by department heads, and particularly to remark upon the very excellent designs submitted during the past two years for major buildings, such as court houses, public schools, colleges, and hospitals. The whole record of the Commission's activities is, in fact, an eloquent account of the value such a public criterion may have in the establishing of standards of public taste.

The Commission of Fine Arts, Washington, D. C.

Similar reports from art commissions and art juries working in a more limited way in cities smaller than New York would give similarly gratifying accounts. And the history of the service which has been rendered to cities and to states in the matter of planning artistic public and semi-public structures by the Commission of Fine Arts at Washington, is a matter yet to be adequately recorded for the average "man on the street."

This national commission has vested in it the duty of advising upon the location of statues, fountains and monuments in the public squares, streets and parks of the District of Columbia, and all other such structures erected under authority of the United States. It also has the responsibility of advising the President or any committee of either house of Congress upon questions of art when called upon to do so. During the eighteen years of its life it has cooperated in the designs not only for large public structures but for coins, medals, etc. But one of its great, unofficial services has been to cities and semi-public organizations in cities in the selection of artists and the artistic soundness of their proposed public art works.

Assistance for Other Cities

Charles Moore, its Chairman, recently said, of this unofficial service to cities and states:

"Such advice has been given as a matter of favor both to the communities and to the artists. The Commission has not encouraged the submission of such problems. On the other hand, it has never declined to give advice when advice has seemed to be desired by both community and artists. Various members of the Commission are being called upon from time to time to act on juries for cities, universities, and like bodies. . . . Particularly has the Commission had satisfaction in guiding and assisting colleges, churches, patriotic organizations, and even business concerns where such services would tend toward the harmonious and permanent development of the National Capital and the interest of the Nation at large."

The influence which these two powerful bodies have had has undoubtedly made itself felt in every part of the United States. The Art Commission of the City of New York has exerted the power of a fine example. The National Commission of Fine Arts has given unsparingly its actual valuable, long-distance aid.

Often Quoted—But Worth Quoting Again

When we build, let us think that we build forever. Let it not be for the present delight, for the present use alone. Let it be such work as our descendants will thank us for, and let us think as we lay stone on stone that a time is to come when those stones will be held sacred because our hands have touched them, and that men will say when they look back upon the labor and wrought substance of them, "See, this our fathers did for us."—JOHN RUSKIN.

Jim the Truckman Kicks the "Drivin' Fools and Walkin' Yaps"

Two "Kicks" from a New Book Called "Stay Alive," by Marcus Dow

Jay-Walkin' Yaps (Kick No. 12)

MOST people thinks the shortest distance between two points is just simply from here to there. The only route they can see to any place when walkin' is via the well known though much abused bee-line. Short and direct is their motto when crossin' a street, and if they is in the middle of the block when they decides they want to get to the other side, why should they wait till they get to the next crossin'? By that time they might change their minds or somethin'. So therefore, pronto, out they ducks into the feverish highway which is burnin' up with the friction of rubber tires passin' over it continuous. Mebbe they is lucky and gets to the opposite shore, I mean curb, without takin' a forced nose-dive due to and by reason of a rushin', on-comin', naptha wagon, commonly called a automobile, hittin' 'em where they least expected it.

They say that figures don't lie. Of course back in the days of bustles and corsets you never could tell, but nowadays it's different. You can usually depend on what you see as bein' a fact. And so, at the risk of bein' a bore, I'm goin' to show you a couple of figures or two. On paper I mean.

Not so long ago, I was talkin' to a guy who was doin' some work for the Police Department of the big city of New York, helpin' to educate six million folks how to save their skins, their scalps and their dignity on the streets of their fair city. He kept a record of the killin's of walkers. In one year they was 542 people bumped off by autos while crossin' streets. Only 190 of 'em was annihilated at crossin's. The rest of 'em, which was two-thirds of the total, took the count while crossin' in the middle of the block, though them that crossed in the middle of the block was way in the minority.

When yaps crosses a street in the middle of the block usually a parked car standin' by the curb shuts off their view. He and she can't see what's comin'. They steps in front of a on-comin' tourin' car, taxi, truck or what have you got, and takes a wallop that transports 'em to the land of the great majority. Whether that be heaven or some other well known place you'll have to figure out for yourself.

Now, the main point in this here yarn, if you by chance ain't got it yet, is that it's safer to cross streets at regular crossin's. As a habit to follow it's got jay-walkin' skinned a mile. The trouble with jay-walkin' yaps, they is most generally wool gatherin' at the time and they steps out into the most dangerous part of a street without thinkin' and without lookin'. The birds that is drivin' cars don't expect to find no one there, and then suddenly out from behind a parked car steps Mr. or Mrs. Yap and then—bingo! Bring on a stretcher and a broom and sweep up the remains! That's all that's left to do.

> ***"Stay Alive!"***
>
> ***Every careless driver and every heedless walker gets, in this book of Marcus Dow's, what Jim calls "a good swift kick in the shins." But, as the author's purpose is indicated by the title, each one of us should take with meekness and repentance our bawling-out, and should, by popular education in public safety, make the reproof effective in our own communities. The author's knowledge of the principles and practice of public safety has been gained during many years of work in that field, notably as President of the National Safety Council and in other official positions in that organization. "Stay Alive" is published by Marcus Dow, Inc., of New York, by whose permission the extracts on this and the opposite page are reproduced. See also Municipal and Civic Publications, this issue.***

But regardless of where you cross, cultivate the habit of *lookin' both ways first.* The muscles in your neck need exercise. From my observations, fair and impartial, I calculate they is ten million yaps in this country that is muscle-bound in the neck. This kick is for them, too.

And here's somethin' else for you to ponder over. Walkers that busts over a street in the middle of a block helps to make *auto drivers* dangerous. You don't know why? I'll tell you. 'Cause it makes them that drives jumpy and nervous. That's why.

"I Pass!"
(Kick No. 26)

Passin' is a popular pastime among folks addicted to the habit of playin' a game called bridge. I don't know why they call it bridge, 'cause they ain't no such thing in the game as a bridge to help you put yourself across. You gotta swim or else you sink. And if you have a bone-head partner or bum cards, sink it is—accordin' to my best and worst experiences. Yes, I sometimes play *at* that high-brow game myself. I'd rather play a game of rummy or poker any day, but the wife she learnt this highfalutin' bridge stuff from a shoe salesman's wife and a coupla other dames, so I got forced into it, if you know what I mean.

Now in this brain-twistin' game they is a lot of times when it's *safe* to pass and not so safe if you don't. Once when I was takin' part in one of them battles o' wits (or nit-wits as it happened to be in this case), the other male guy in our merry party of four scowlin' faces was partner to a dame who certainly knew her bridge, or leastways thought she did. She got so much enjoyment out o' the game the wrinkles in her forehead had become a permanent wave.

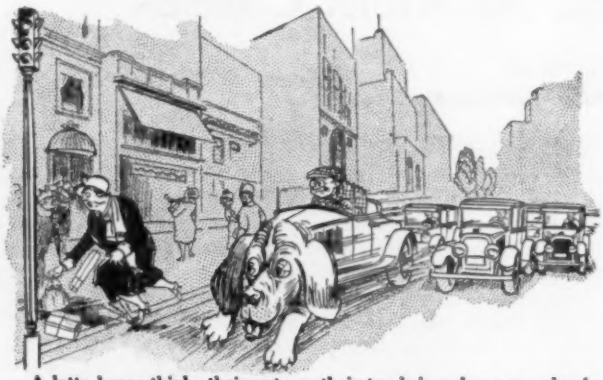
Well, sir, in the second rubber, I think it was, the said dame bid a weak *one* in hearts, she havin' mebbe four of them perticular red - spotted pasteboards, and wanted to indicate to the dumb bimbo sittin' opposite her how she stood. After our side had enlisted for a spade he raises her, 'cause he had a lonesome ten-spot in her suit, but not a face card in his fist. He had a hand like a foot, as they say in bridge parly-voo. She boosted her bid up another point after our side give two spades. She got the bid, but she also got set good and proper, and judgin' from the looks she give the cowerin', tremblin' little feller that raised her, it would have been safer, oh, very much safer, had he of said, manful like, "I pass!"

But, say folks, they is times when passin' *ain't* safe. Put your ear up to the megaphone and listen to this:

A guy in a sedan was bowlin' down a bullyvard one day and started to pass on the left of a big movin' van. He started to pass just as they was goin' over a street crossin'. Another dub in a open boat comin' off the side street was tryin' to beat it across in front of the movin' van. He cleared the van all right all right, but ploughed smack into the middle of the sedan. The poor guy drivin' the sedan was bumped off. He passed on to another world, if you get me. And it was his own fault, notwithstandin' and regardless of the dumb carelessness of the bird that run into him. He had no right to pass that van travelin' the same direction he was, *while goin' over a street intersection.*

So give attention to your *passin'* habits! It's plumb dangerous to pass another car on a street crossin'. Likewise and furthermore, it's suicide to pass goin' around a curve where you can't see what's comin' on the other side of that curve. It's dead wrong to pass a car goin' your way up a hill where you can't see what's just over the top o' that hill.

If you don't mind your passin', and do it accordin' to the best and safest rules o' the game, some sweet day you'll pass into eternity, quick and sudden like. And that's worse than overbiddin' your hand.



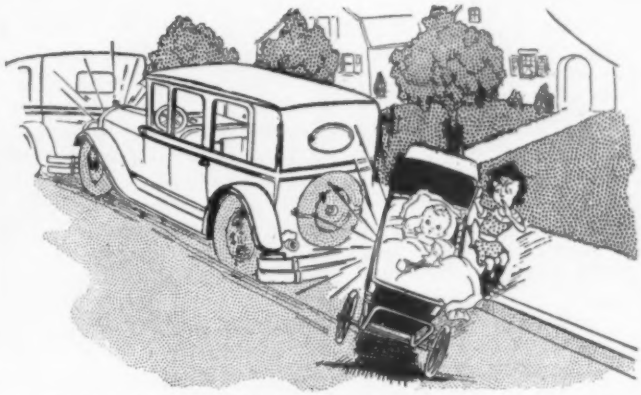
A lotta bozos thinks their auto or their truck is a dawg on a leash. When the light changes to green they shoot forward like the leash busted.

Killin' folks outright is bad enough, but even scarin' 'em to death don't win you no applause.

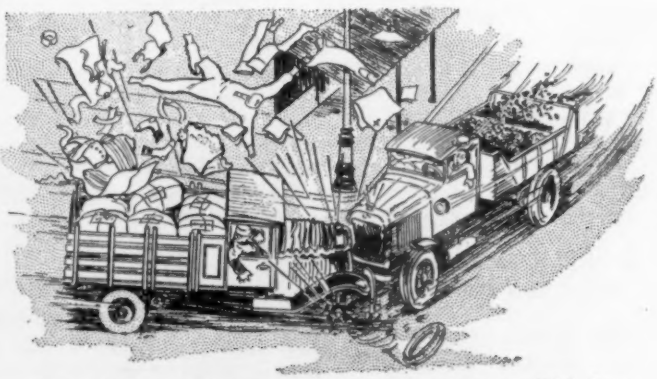
Hitch your brain to the thing you're supposed to be doin'. If that thing happens to be operatin' a motor vehicle, tie it with a double knot so it won't pull loose.

They's a difference between a excuse and a reason. You can find plenty excuses but not one bloomin' reason for bein' careless.

Look back before you roll back and there won't be no come-back.



Backed without lookin' behind him, slammed into a car parked there and sent it smack into a baby carriage.



With a buildin' on the corner givin' 'em a bum view, why didn't them two birds slow down approachin' that crossin'? Ask me another!

Teachin' kids readin', writin' and 'rithmetic makes 'em educated. Teachin' 'em safety helps 'em live and enjoy that education.

Don't try to hug the car in front o' you. Wait till you get home and hug your wife.

THESE DRAWINGS FROM "STAY ALIVE" ILLUSTRATE EFFECTIVELY THE NEED OF JIM THE TRUCKMAN'S KICKS

Each of the comments in the six boxes is used at the end of a chapter in the book and emphasizes a special kick

New York's New Method of Investigating Fatal Traffic Accident Causes

By PHILIP D. HOYT
First Deputy Police Commissioner, New York City

IN order to go more deeply into accidents involving deaths in New York City, the Traffic Division has recently inaugurated a system providing for a more detailed investigation of such accidents. Every death now occurring in the city as the result of a highway accident is investigated by a special squad operating directly from Police Headquarters and reporting to me. This squad is composed of experienced traffic men who work in uniform. The work is so distributed that the investigator can give a full day to each fatal accident.

Although the information received from the patrolmen on post is quite complete, there are frequently conditions at the points where accidents occur which the ordinary policeman does not feel a responsibility to investigate and make the basis of recommendations to his superiors. The members of this special squad, being few in number, know exactly what information is required.

The investigator visits the scene of the accident at the same hour of the day when it occurred. This enables him to take into account all conditions at that particular time, such, for example, as the volume of traffic, street lighting and many other factors. The investigators are draftsmen, and their report includes a diagram of the locality showing all the physical features and the positions of the vehicles or pedestrians figuring in the accident. Specific information covering several points is required in the report—whether there was a traffic post or a traffic light at the point involved, the street-lighting conditions, any special traffic regulations such as one-way streets in the vicinity, and the condition of the pavement. These reports are taken up in conference with the patrolmen who write them and there is a thorough discussion of conditions at each point, so that we may get an answer in each case to the question whether anything possible can be done to improve conditions.

Many of the recommendations, naturally, come within the jurisdiction of the Police Department. Attention may be called to a crossing where traffic lights or a traffic policeman should be provided; warning lights indicating a "dead end" street, or various other traffic equipment of a cautionary nature may be necessary. Regulations, such as one-way streets, may be advisable. The investigator's visit may result in the discovery that particular attention to enforcement of speed laws should be given at this point. White lines to define pedestrian crossings may be needed.

Many of the recommendations relate to other departments. Street-lighting conditions may be in need of improvement. Repairs to highways or bridges may be necessary. The highway facilities may be inadequate, requiring engineering measures for relief.

In some cases the recommendations relate to individuals or private agencies, involving, for example, the routing of fleets of vehicles to less congested sections. The investigations frequently disclose facts that are of interest to the school authorities, and their cooperation is sought.

This system of a detailed investigation of fatalities, although comparatively new and by no means fully developed, has been found to be of the greatest assistance in improving traffic conditions throughout the city.

Traffic Fatalities Decreasing in New York

Handling traffic safely under such conditions on the city's 5,000 miles of streets is a task calling for the utmost effort. Our toll from street accidents is high, yet we feel that we are making some progress in our attempt to conserve human life by a thorough and systematic study of accidents.

Last year, for the first time since the appearance of the automobile, the number of fatalities and injuries to both adults and children resulting from highway accidents in this city, decreased from the preceding year. I refer to the total, not to the percentage according to population or to the number of automobiles. The fatalities from motor vehicle accidents in this city in 1927 were 17.8 per 100,000 of population. The figures of the National Safety Council show that the general rate for the entire country, urban and rural, was 19.6 per 100,000, while the urban rate was 22.4. So the streets of New York were safer than the highways of the country as a whole.

The most encouraging fact, however, is that since 1925 there has been a steady reduction year after year in fatalities to children of 16 and under due to highway accidents in New York City. In 1923 there were 453 children killed; in 1924, 432; in 1925, 422; in 1926, 413; in 1927, 408. In the first eight months of this year 218 children were killed as compared with 266 during the corresponding period last year, a decrease of 18 per cent from last year. In considering these figures it must be borne in mind that in the period from 1923 to this year the number of cars practically doubled. These figures include not only automobile accidents but accidents involving all classes of vehicles—street cars, horse-drawn vehicles, riding horses, motorcycles and bicycles.

Safety Education in the Schools

Teaching a child how to take care of himself under present traffic conditions is a duty no less important than teaching reading, writing and arithmetic. Safety instruction, furthermore, can be combined with those and other subjects of the regular curriculum without taking any additional time. Such instruction, in fact, can be so planned that it will stimulate interest in the subjects into which it is incorporated.

Facts as Factors in the Reduction of Traffic Accidents

In his paper, "How We Use Statistics in Accident Prevention," read before the National Safety Congress on October 2, Commissioner Hoyt outlined in some detail the accident record methods of the Traffic Division of the New York Police Department. The decided progress in accident reduction recently shown in New York was attributed by the speaker in no small measure to the use of accident records.

Excerpts from this paper, with special reference to New York's new method of investigating fatal accidents, and Commissioner Hoyt's advocacy of more systematic safety education in American schools, comprise the accompanying article.

New York's First Printed Traffic Regulations Issued Just 25 Years Ago

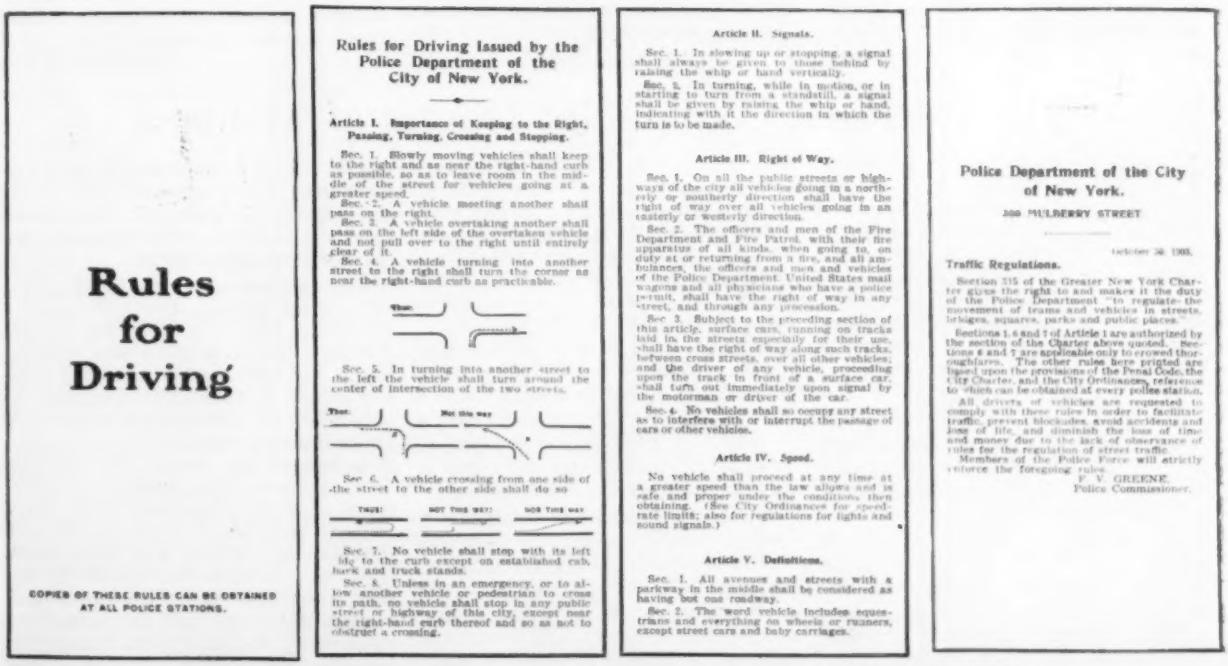
By CHARLES J. TILDEN
PROFESSOR OF ENGINEERING MECHANICS, YALE UNIVERSITY

THE end of last month (October, 1928) saw the quarter-centenary of one of the most important events in the history of New York's industrial and social life. On October 30, 1903, the first set of printed traffic regulations was issued by the city's Police Department. Up to that time, except for the time-honored rule of the road, "Keep to the right"—more a tradition than a regulation—little had been done in the way of a formal and systematic attempt to regulate the growing traffic on the city's streets.

The need for such regulation had, however, been realized for years—by one man. The growing congestion, with consequent delay and confusion, had been noted by William Phelps Eno, who set his order-loving brain to work to find a remedy. Early in 1900 he published an article calling attention to the need for reform, and worked in close touch with Capt. A. R. Piper, then Deputy Police Commissioner in charge of traffic, in the effort to bring some degree of order out of the chaos.

WILLIAM PHELPS ENO

In January, 1901, Mr. Eno published a proposed set of ordinances, entitled "Rules of the Road Revised," and after these had been carefully thought over and further improved, they were sent to the Board of Aldermen with the suggestion that they be put into effect in New York City. These gentlemen, however, declined to adopt them, desiring to substitute another set compiled by one of their own members. But these, in turn, were not favored by the Police, who felt they would be a hindrance rather than a help in the growing task of expediting and regulating the city's rapidly growing street traffic. As a matter of fact, the Police were in doubt as to the extent of their authority in this matter. A study of the charter of the city of New York, however, revealed not only authority for the Police to regulate traffic, but the fact that they were specifically ordered to do so. The "Rules" which had been pub-



Rules for Driving

COPIES OF THESE RULES CAN BE OBTAINED AT ALL POLICE STATIONS.

Rules for Driving Issued by the Police Department of the City of New York.

Article I. Importance of Keeping to the Right, Passing, Turning, Crossing and Stopping.

Sec. 1. Slowly moving vehicles shall keep to the right and as near the right-hand curb as possible, so as to leave room in the middle of the street for vehicles going at a greater speed.

Sec. 2. A vehicle meeting another shall pass on the right.

Sec. 3. A vehicle overtaking another shall pass on the left side of the overtaken vehicle and not pull over to the right until entirely clear of it.

Sec. 4. A vehicle turning into another street to the right shall turn the corner as near the right-hand curb as practicable.

Thus:

Sec. 5. In turning into another street to the left the vehicle shall turn around the center of intersection of the two streets.

Thus: Not this way

Sec. 6. A vehicle crossing from one side of the street to the other side shall do so

THUS: NOT THIS WAY: NOR THIS WAY

Sec. 7. No vehicle shall stop with its left side to the curb except on established cab, hack and truck stands.

Sec. 8. Unless in an emergency, or to allow another vehicle or pedestrian to cross its path, no vehicle shall stop in any public street or highway of this city, except near the right-hand curb thereof and so as not to obstruct a crossing.

Article II. Signals.

Sec. 1. In slowing up or stopping, a signal shall always be given to those behind by raising the whip or hand vertically.

Sec. 2. In turning, while in motion, or in starting to turn from a standstill, a signal shall be given by raising the whip or hand, indicating with it the direction in which the turn is to be made.

Article III. Right of Way.

Sec. 1. On all the public streets or highways of the city all vehicles going in a northerly or southerly direction shall have the right of way over all vehicles going in an easterly or westerly direction.

Sec. 2. The officers and men of the Fire Department and Fire Patrol, with their fire apparatus of all kinds, when going to, on duty at or returning from a fire, and all ambulances, the officers and men and vehicles of the Police Department, United States mail wagons and all physicians who have a police permit, shall have the right of way in any street, and through any procession.

Sec. 3. Subject to the preceding section of this article, surface cars, running on tracks laid in the streets especially for their use, shall have the right of way along such tracks, between cross streets, over all other vehicles; and the driver of any vehicle, proceeding upon the track in front of a surface car, shall turn out immediately upon signal by the motorman or driver of the car.

Sec. 4. No vehicles shall so occupy any street as to interfere with or interrupt the passage of cars or other vehicles.

Article IV. Speed.

No vehicle shall proceed at any time at a greater speed than the law allows and is safe and proper under the conditions then obtaining. (See City Ordinances for speed-rate limits; also for regulations for lights and sound signals.)

Article V. Definitions.

Sec. 1. All avenues and streets with a parkway in the middle shall be considered as having but one roadway.

Sec. 2. The word vehicle includes equestrians and everything on wheels or runners, except street cars and baby carriages.

Police Department of the City of New York.

300 MULBERRY STREET

October 30, 1903.

Traffic Regulations.

Section 315 of the Greater New York Charter gives the right to and makes it the duty of the Police Department "to regulate the movement of teams and vehicles in streets, bridges, squares, parks and public places."

Sections 1, 6 and 7 of Article 1 are authorized by the section of the Charter above quoted. Sections 6 and 7 are applicable only to crowded thoroughfares. The other rules here printed are based upon the provisions of the Penal Code, the City Charter, and the City Ordinances, reference to which can be obtained at every police station.

All drivers of vehicles are requested to comply with these rules in order to facilitate traffic, prevent blockades, avoid accidents and loss of life, and diminish the loss of time and money due to the lack of observance of rules for the regulation of street traffic.

Members of the Police Force will strictly enforce the foregoing rules.

F. V. GREENE,
Police Commissioner.

REPRODUCTION OF THE FOUR PAGES OF NEW YORK'S FIRST PRINTED TRAFFIC RULES

lished as a proposed ordinance were therefore recast as a set of highway traffic police regulations. As soon as these were submitted to the then Police Commissioner, Gen. Francis V. Greene, and his attention called to the responsibility which the city charter directly placed upon his department, he signed the order, and the first traffic regulations in the city of Greater New York were in effect.

These regulations were the beginning, but they have formed the basis of all subsequent regulatory codes. They were revised and reissued no less than five times prior to 1918. In 1919 they were again revised and brought up to date by the Highways Transport Committee of the Council of National Defense, of which Mr. Eno, the original author, was a member. An outgrowth of this Committee is the Highway Education Board, formed in 1920 to foster and continue this phase of the work of the Council of National Defense. This Board called a National Conference on Education for Highway Engineering and Highway Transport in Washington in October, 1922, at which a special committee submitted the following recommendations, which were approved and adopted by the Conference:

"The Committee believes that a study of the underlying principles of the best practice in relation to traffic regulation and safety is of fundamental importance. The Committee, therefore, recommends that the Highway Education Board ask The Eno Foundation for Highway Traffic Regulation, Inc., to take up these problems as a continuation of the work of the Council of National Defense for the investigation, codification, publication and standardization of general highway traffic regulation; thus insuring continuity and permanency in the study of these important problems."

The Eno Foundation for Highway Traffic Regulation had been established and incorporated in 1921. It has wide powers in its charter for adjustment to changing conditions, and a generous endowment for carrying on the work of its founder. It is already operating as an important agency in this field. The resolution quoted above places upon it the responsibility for keeping the General Highway Traffic Regulations — the C.N.D. Code—up to date.

In addition, the Foundation has given advice on the solution of traffic problems to various municipalities and towns. A plan for traffic control at the Rond Point on the Champs Elysées in Paris, prepared by the Eno Foundation, has recently been put into effect in that city.

Cooperative Subdivisions in Denmark

THE majority of the subdivisions in and near Copenhagen are cooperative. A group of 25 to 300 people, more usually working men, join together in a cooperative association to purchase a tract, lay it out, put in utilities and erect buildings. Each member pays so much per month as in our building and loan associations. The city lends capital on first mortgage up to 75 per cent or more of the total cost of land and buildings. The cooperators state their preferences as to when they want to build. If there is not enough capital available, they draw lots for precedence in building. No member owns his house or land, but he eventually owns stock in the association equal in value to his house, his lot and his pro rata part of the streets, parks, public utilities and services. He can will his house to his family or he can lease or even sell his rights in it to anyone agreeable to the other members.

City Engineer Bjerre controls the layout of each subdivision, the layout and upkeep of streets, public utilities and parks and other open spaces, the construction of buildings and, negatively at least, the character of building.

In a recent conversation with the writer, Mr. Bjerre stated that these cooperatives are virtually always successful and that there appears to be no complaint on the part of the members. He said that the greatest difficulty lay in the necessity of providing immediately complete development and utilities throughout the tract, all of which is entirely at the expense of the association. This is due to the fact that the members who wish to build right away are scattered all over the subdivision. He recommends concentrating those who wish to build first, in one quarter of the tract; a second group in a second quarter; and so on—and then develop the streets and utilities accordingly.

Another difficulty lies in the middleman, who always takes his profit between the original owner of the tract and the purchasing cooperative.

The advantages of the cooperative method, aside from the small capital involved and the savings on profits, lie in the ease of giving up one's residence, the large city loan, and the concessions the city makes as to street widths and other development features.

Denmark is the home of cooperation. People cooperate for many things. There are many people trained in cooperative management. However, the principle is the same as that applied to many American cooperative apartments.

GEORGE B. FORD.

The 100 Rural Community Houses of Montana

IN more than one hundred rural communities of Montana the need for some sort of community center has led to the erection of a special building usually called the "Community Hall." Some of these are situated in villages where they serve both villagers and farmers and are also used as gymnasiums by the school pupils. More, however, are located in the open country, many of them ten, fifteen twenty-five, and even fifty miles from any town or village of consequence.

The picture of these community halls given by J. Wheeler Barger, Department of Rural Life, Montana Agricultural Experiment Station, in a recent issue of *Rural America* is reminiscent of the old pioneer days of New England when the Meeting House was the center of the communal life. The writer says:

"Much of the material and the labor necessary for the hall is contributed by the farmers and ranchers of the community. Many of the halls are one- or two-room structures, sometimes made of logs, costing between $3,000 and $5,000, while a few are relatively more pretentious buildings costing between $30,000 and $40,000. Frequently the smaller buildings are 20 x 40, or 30 by 60 feet, while the larger are 40 by 100, or 50 by 125 feet . . . some of the larger have as many as nine rooms, the average number being three. Practically every hall is equipped with a stage, piano, chairs or benches, and kitchen utensils, while some have a phonograph, radio, motion picture machine, athletic supplies and a community library."

In some instances, Mr. Barger shows, some community organization of limited membership builds the community house, but these are in the minority. When the entire community sponsors the building, a corporation is sometimes formed. Money is raised by the sale of shares of stock, subscriptions from local persons, and more especially from business men in surrounding towns, and by entertainments of various kinds. Incorporated undertakings have proved on the whole more successful than loose organizations.

"Organizations using the buildings include Farm Bureaus, Home Demonstration Clubs, 4-H Clubs, Rural Boy Scouts, American Legion, religious organizations, lodges, and various other social and business groups. In many of the communities, individuals are allowed to use the halls for private entertainments upon payment of a nominal fee. Around the halls are centered community development programs along the lines of education, recreation, religion, health, beautification, and home-making. School and home-talent programs, lectures on various subjects, religious meetings, dances, banquets and community fairs and athletic contests are but a few of the many types of meetings regularly held in these community centers."

Is the Recreational Use of Impounding Reservoirs Permissible?

By HELMAN ROSENTHAL
CHEMIST, DALLAS, TEXAS, WATER-WORKS

HOW much to protect an impounding reservoir will depend on what is being done to the water before it is pumped to the consumers. When a water is pumped direct from the reservoir to the mains, and only chlorination is resorted to, greater precaution is required than when the water is chemically treated and filtered.

The type of water, the dilution factor, and the distances from the intake to points where boating, fishing, or hunting is permitted must be considered.

Let us consider specifically a reservoir the water of which goes to a purification plant. In this case should hunting, boating, and fishing be permitted, or even bathing, provided the distance from the beach to the intake is of considerable distance? On one side are the sportsmen and on the other the sanitarians. Probably neither side has made any extensive investigations on which to base definite conclusions.

Conditions at Dallas

The writer has had the privilege of observing for several years the water from lakes in Dallas. Dallas has four sources of supply: deep artesian wells (which supply only part of the city); Elm Fork of the Trinity River; a small reservoir containing about 700 million gallons of water; and a larger reservoir containing about 5 billion gallons of water. The latter reservoir covers an area of about 1,500 acres and has a shore line of about 12 miles. Drainage from the surrounding country (which includes a number of dairies and one or two trash dumps) enters the lake; hunting and fishing in season are permitted, and there are no restrictions on boating. Bathing is not permitted, but undoubtedly a few mischievous boys could be found in the lake on any warm day.

That part of the city of Dallas which uses chemically treated water consumes about 14 million gallons per day, 8 million gallons of which comes from Elm Fork and Bachman Lake, and about 6 millions from White Rock Lake.

The latter lake was opened about 1910 and, as stated above, boating, hunting, and fishing are permitted. At no time, however, has the pollution from the smaller or the larger lake been so great that careful treatment could not produce an A-1 effluent.

Making the Question Specific

The whole problem simmers down to the question: What is the limit of pollution that can be handled safely and economically by the various processes of purification at our command? The writer has sent out the following questionnaire to a number of water-works men throughout the country:

1. What is the average count on Agar at 37 degrees C.—24 hours?
2. What is the average B. Coli content per 100 ml.?
3. What is the highest Agar count ever obtained?
4. What is the highest B. Coli content per 100 ml. ever obtained?
5. What is the average Agar count and B. Coli index in final effluent?
6. What is the average Agar count in tap water?
7. What is the B. Coli index of city tap water?
8. Under the most adverse conditions have you any trouble in meeting the Treasury standards for pure water?

Answers were received from eleven cities, and since I failed to ask permission to use their names I will just call them A, B, C, etc.

A Controversial Question

This subject is necessarily controversial. There are some persons who would fence off all reservoirs and let no one have a look at them. There are others who would throw them wide open. Neither of these opinions is, of course, based on any scientific facts.

All through history, water has undoubtedly been the cause of many epidemics of cholera, typhoid, dysentery, etc., and is therefore looked upon by many as a continual danger source unless unusual precautions are taken to protect the supply.

A

City of About 900,000
Water Treated and Filtered

1. Average count on Agar 37°C. 24 hours—300 per ml.
2. B. Coli, average—600 per 100 ml.
3. Highest count ever obtained—70,000 per ml
4. Highest B. Coli ever obtained—100,000 per 100 monthly average 6,550.
5. Average Agar count 37°—0.1 per ml. (?)
   B. Coli average—0.3 per 100
6.
7. B. Coli index of city tap water—.3 per 100
8. No trouble in meeting the Treasury standard.

"My personal opinion is not to allow hunting, fishing, and boating on the watershed, as there is a potential danger of a typhoid fever outbreak, which would be very hard to check. I am greatly in favor of keeping the public away from the watershed."

B

City of About One Million Population
Water Treated and Filtered

No definite answers, but from a summary report received from this city the following was taken:
Raw water—very low
Average count—33
Tap water—2
B. Coli—284 out of a total of 2,186 1-ml. tubes confirmed, and 4,807 tubes out of a total of 10,975 10-ml. tubes confirmed.
In the filtered water 1,102 out of 10,890 10-ml. tubes confirmed, and in the tap only 5 out of a total of 11,135 10-ml. confirmed.

The Superintendent of Filtration does not advocate hunting, boating and fishing, and has the following to say: "It has always been my opinion that these sources of supply should receive the greatest amount of protection, because while it is not the usual thing to suffer any pollution, there are rare occasions when epidemics of appreciable size are caused through carelessness."

C

A City of 800,000 Population

1. Average count on Agar 37° C. 24 hours—175
2. B. Coli, average—750 ml.
3. Highest count ever obtained—31,000 ml.
4. Highest B. Coli—1,000 per 100 ml.
5. Average Agar count—37°—2 per ml.
   B. Coli average—6
6.
7. B. Coli index of city tap water—.1 (not stated whether 1 or 100 ml.)
8. With chlorination we easily meet the Treasury standard.

The Superintendent has this to say: "Regarding the matter of boating and fishing in our reservoir, we have never allowed hunting, fishing or boating on our property. We control 8,000 acres which have been made into a state game preserve."

D

A City of About 450,000 Population

1. Average 5 yr. count on Agar 37° C. 24 hrs—2,200
2. B. Coli, average—2,000 per 100 ml.
3. Highest count ever obtained—31,000 per ml.
4. Highest B. Coli ever obtained—100,000 per 100 ml. (maybe even higher, but we do not go beyond 0.001 dilution)
5. Yearly average Agar count—37° C.—4-12 colonies
   B. Coli average—0.22 to 0.40 per 100
6. Average Agar count in tap water—no tests made
7. B. Coli index of city tap water—Well within the U. S. standard limit of 1B. coli per 100 ml.
8. Under most adverse condition we have no trouble in meeting the B. Coli standard

The Bacteriologist from D had the following to say: "Personally, I can see no objection to permitting hunting and fishing on a raw-water reservoir or a large-size reservoir."

E

A City of About 135,000 Population
Water Unfiltered and Comes from Impounded Reservoir

1. Average colonies on Agar 37° C. 24 hrs—280
2. Average B. Coli—15 per 100 ml.
3. Highest Agar 37° 24 hr.-count—1,000
4. Highest B. Coli per 100 ml.—100
5. Highest Agar count at the pump—100
   B. Coli average—Practically zero
6. Average Agar count in tap water—Two sources of tap water: one direct through lines—no increase in bacteria; the other, from high-pressure reservoir, increases in count considerably. B. index remains uniformly low.
7. Average B. Coli index of city tap water—less than 1 per 100 ml.
8. Water complies with the U. S. Bacteriological standard.

The City Chemist of the city of E states the following: With reference to boating, fishing, and hunting on watersheds, we have permitted these at ——— lake and up to the present time have had no trouble. I see no objection to the practice so long as it is properly controlled."

F

A City of About 150,000 Population
Infiltration Galleries

1. Average colonies on Agar at 37° C. 24 hrs.—1,901
2. Average B. Coli per 100 ml.—3,300
3. Highest number of colonies—50,000
4. Highest B. Coli per 100 ml.—10,000 (do not make lower dilutions than .01 ml.)
5. Average Agar count in effluent—0.91
   B. Coli average—only three days in the year when B. Coli were found in 50 ml.
6. Average Agar colonies in tap water—0.81
7. Only four days during the year were B. Coli found in 50 ml.
8. Our water has not failed to comply with the U. S. Treasury standard of 1914 at any time during recent years.

Regarding hunting, boating, and fishing, the chemist at this water-works has the following to say: "Owing to the fact that our water is collected entirely by means of infiltration galleries, we have no storage or impounding reservoirs, and therefore feel that our experience or opinion on this matter would not be of much value to you."

G

A City of Over One Million Population

1. Colonies on Agar at 37° C. at 48 hrs. (average of 3 years)—584
2. B. Coli average—most probable number average 3 years (McCrady)—40.8 per 100 ml.
3. Highest number of colonies on Agar at 37° 24 hrs.—81,000 per ml.
4. Highest number of colon organisms per 100 ml. in the raw water—30,000 (most probable number McCrady)
5. Average 3 years chlorinated water from taps or discharge of pumps—7
   Three-year average B. Coli in chlorinated water from taps on discharge of pumps (most probable McCrady number)—0.051 per 100 ml.
6. and 7. (answered in 5)
8. Meeting Treasury standards for pure water—yes, with one or two exceptions.

The City Engineer of G., who answered the questionnaire, states: "As a general rule this department does not favor the use of water reservoirs for recreational purposes."

H

A City of Over One Million Population
Water Chlorinated but not Filtered

1. Average colonies on Agar at 37° C. 24 hrs.—343
2. Average B. Coli per 100 ml.—699
3.
4. Highest B. Coli—10,000 B. Coli per 100 frequently obtained
5.
6. Average bacterial colonies in city tap water—5 per ml.
7. Average B. Coli in city tap water—0.6 per 100 ml.
8. Yes (complying always with the U. S. Treasury standard)

The Commissioner of the city of H. states: "Boating and fishing are permitted in most of the lakes and reservoirs which constitute our water-supply."

I

A City of About 840,000 Population
Water Treated and Filtered

1. Agar colonies at 37° C. 24 hrs.—9,700 per 1 ml.
2. Average B. Coli—2,470 per 100 ml.
3. Highest Agar count ever obtained at 37° C. 24 hrs.—94,000
4. Highest number of colon organisms—60,000 (It is not stated whether this is per 1 ml. or per 100. It is assumed though that 100 ml. is meant.)
5. Average Agar colonies on final effluent at 37° C. 24 hrs.—23 ml.
   B. Coli final effluent—0.28
6. Average Agar colonies in tap water 37° C. 24 hrs.—380 (this high count due to passage through open clear basins and after growth)
7. Average number of B. Coli—1.0 per 100 ml.

The following is a statement made by the Chief Chemical Engineer: "Where water is to be treated and filtered, I can see no objection to fishing and hunting on the watershed. In districts where no treatment of the water follows storage, no such use of the watershed should be maintained and the hunters and fishers should be notified of the proper disposal of all waste and litter."

J

A City of About 160,000 Population
Water Treated and Filtered

1. Average colonies on Agar at 37° C. 24 hrs.—218
2. Average B. Coli per 100 ml.—2,926
3. Highest Agar count—not given; merely states over 10,000 on a number of occasions; highest bacterial count on Agar (20 degrees) 85,000
4. Highest B. Coli average for any one month—66.97 per 100
5. Average Agar count in effluent—14
   B. Coli average—1.19 per 100 ml.
6.
7.
8. We experience considerable difficulty at the time of high colon content of the raw water in meeting the U. S. standard.

The chief chemist of J. further states as follows: "We have several small cities and villages on our watershed which contribute very largely to our raw-water contamination. In your case I would say that only fishing, hunting and boating would do you little damage."

K

A City of About 300,000 Population
Gets Its Water from a River; Water is Treated and Filtered

No definite answers, but to my personal knowledge this water will run very high both in count and in B. Coli. Boating, hunting and fishing are permitted, but not swimming, and this city has rarely to my knowledge ever failed to comply with the Treasury standard.

SUMMARY TABLE SHOWING RESULTS IN A NUMBER OF CITIES IN THE UNITED STATES

	City Population Estimated	Highest Agar Count 37 C° 24 hrs. 1 ml.	Highest B. Coli Per 100 ml.	Average Agar Count 100 ml.	Average B. Coli Per 100 ml.	Agar Count Tap Water 1 ml.	B. Coli Per 100 ml. Tap Water	Water Treated and Filtered	Water Chlorinated but Not Filtered
A.	900,000	70,000	100,000	300	600	0.1(?)	0.3	yes	.....
B.	1,000,000	.....	.....	33	....	2.	....	yes	....
C.	800,000	31,000	1,000	175	750	2.	0.1	yes	....
D.	450,000	31,000	100,000	2200	2000	....	1.	yes	....
E.	135,000	1,800	100	280	15	100	practically 0	no	yes
F.	150,000	50,000	10,000	1901	3300	0.81 (?)		Infiltration galleries	?
G.	over 1,000,000	81,000	30,000 (do not make lower dilution than 0.01: (McCrady No.)	584	40.8 (McCrady No.)	7	0.051 (McCrady No.)	no	yes
H.	over 1,000,000	.....	10,000	343	699	5	0.6	no	yes
I.	800,000	94,000	60,000	9700	2470	*380	1	yes	.....
J.	over 160,000	10,000	.....	218	2926	14	1.19	yes	....
K.	300,000	rather high	rather high	....	....	below 100	below 1	yes	....

*This high count due to passage through open clear basins and after growth. The effluent from the plant has an average count of only 23.

Is the Filtration Plant Overloaded?

On both of the lakes of the Dallas water-supply hunting, boating and fishing are allowed. Furthermore, there are a considerable number of camping sites on both lakes and they, of course, contribute to the pollution. Yet, the bacterial count as well as the B. Coli are very much less than in the river water, hardly ever running over 100, most of the time considerably less than 100 B. Coli per 100 ml. There is no difficulty in producing a water considerably better than the U. S. Treasury standard.

The only criterion as to whether hunting, boating, and fishing or even bathing should be permitted is the load that the water purification plant can safely and economically handle. This is a problem that still needs solution. The work done by the U. S. Public Health Service on the Ohio River is of considerable value but is still insufficient in drawing definite conclusions.

All the answers, with the exception of J., assert that the city never has any trouble in producing a water which meets the U. S. standard. Even J., which states that it sometimes has trouble, has an agar count of only 14 and a B. Coli index of 1.19 per 100 ml. In other words, it seems that, almost regardless of pollution, good results can be obtained. I do not advocate indiscriminate pollution; I am merely trying to analyze the situation in an unprejudiced attitude of mind with the hope that we can arrive at something definite.

It may be argued that it would be ideal to eliminate all possible pollution from our raw waters. Such a condition, even if desirable, would be uneconomical.

Conclusions

In my opinion, we can allow freer use of large reservoirs than has been hitherto thought advisable, provided certain precautions are taken. Especially is this true where lime is used in the treatment, and chlorination is resorted to. It, of course, also means that the man in charge of the water purification plant must be capable, and know at all times the kind of raw water he is getting and the quality of the filtered water. He must be able to interpret results and know how to apply the facts gathered. He must know something about the factor of dilution, the effects of sedimentation both in the reservoir itself and after the treatment with the chemicals.

There may be some additional cost in treatment of polluted raw water, but the additional cost involved in producing a safe effluent should certainly not cause the community to legislate against the use of the watershed or the water itself. Someone has said, "So long as we huddle ourselves together in large cities, we must pay the penalty of concentration." Where water is a scarcity, people have a right to demand that they be allowed, at least, limited use of the water and at the same time demand that the men in charge of the purification plants shall produce an A-1 effluent.

ACKNOWLEDGMENT.—From a paper presented before the American Water Works Association.

How to Move Forward

An intelligent, continuous persistent discussion and agitation by unbiased, honorable men of the problems and methods of municipal government is the one thing needful. Such a discussion must tend to give substance and sanity to public opinion, and it must bring a wholesome and powerful influence to bear on existing government.—WASHINGTON GLADDEN.

Ground Water or Filtered Water?

By E. T. ARCHER
CONSULTING ENGINEER, KANSAS CITY, MO.

SHAWNEE, OKLA., is a city of about 25,000 located 30 miles east of Oklahoma City on the North Fork of the Canadian River, from which it has been drawing its supply of 2,000,000 gallons of water per day. As a source of supply, the North Fork of the Canadian River leaves much to be desired. Originating in the northeast corner of New Mexico, it flows in a southeasterly direction, eventually uniting with the Arkansas River near the Arkansas and Oklahoma line. During its course it flows through the salt plains of northwestern Oklahoma and various oil fields along its course, where it accumulates the oil-field drainage as well as receiving the sewage of various towns along its banks. It is a much-polluted stream.

Practically all the towns along the course of the North Fork have abandoned it as a source of water-supply, except Oklahoma City, where its use is continued only by the city's having made arrangements to impound the flood flow and by-pass the dry-weather flow and by filtering the supply.

Early Water-Works at Shawnee

The city's original water system was built in 1904, and at that time no treatment whatever was provided. In 1914 a small filter plant with a capacity of about 1,000,000 gallons per day was built, and in 1920 there was built from the proceeds of the $200,000 bond issue a modern filter plant with a capacity of 3,000,000 gallons per day. The filtration plant in general consisted of a 3,000,000-gallon concrete roughing basin, a 750,000-gallon concrete sedimentation basin, rapid sand filters, aeration equipment, and a clear-water storage of about 200,000 gallons. The total investment in the filter plant, including several bond issues, is approximately $300,000. The population of Shawnee had grown from 6,000 in 1900 to 18,000 in 1926, and with the development of the Seminole oil fields about 30 miles east of the city, the increase in population has been very rapid, until at present the city has a population of about 25,000 people.

Sentiment Against River Water

Due not so much to the hardness of the water, as to its color and odor and to the well-disseminated idea that Shawnee was drinking Oklahoma City sewage, the local sentiment had grown much opposed to the continuance of the river as a water-supply. In order to ascertain if it were possible to better the water-supply conditions, an investigation and report on new sources of supply was made. The idea was to secure a well water-supply, if possible, and get away entirely from the use of surface waters.

Investigations for New Supply

Extensive investigations including about 150 test holes, aggregating 9,000 linear feet, showed that there was a sandy water-bearing stratum with the coarsest portion and the maximum depth about 2¾ miles northwest of Shawnee City limits in an area of about 80 acres. The investigation and tests were carried forward on the assumption that the entire supply of 3,000,000 gallons per day could be secured from a reasonable number of wells, necessitating an individual capacity of each well of 170 to 200 gallons per minute, which requires a different type of well from the ordinary farm wells prevailing throughout the section.

A study of the stratum indicated that with a properly constructed gravel-wall well a centrifugal pump installation was best adapted. Tests with Layne-Bowler pumps showed that the wells could give a continuous supply ranging from 175 to 200 gallons, the variations resulting from the depth and coarseness of gravel of the stratum at different locations. One point which was observed particularly in determining upon the size of pumps was the draw-down in the wells, and in no case was the draw-down allowed to go below 50 per cent of the water-bearing stratum. This rule in general if carried out would save a large number of installations that have been ruined through over-production. In order to facilitate increased production and to allow for any restriction in the capacity of the wells, two additional wells were constructed, tapped and held in reserve for the future.

As ultimately designed, the well supply consists of 12 gravel-wall type wells with 30-inch diameter outside casings and 15-inch diameter inside casings, with the area between the two casings filled with graded gravel. Each well is equipped with an individual deep-well centrifugal pump and motor and is connected to a 4-inch discharge line which in turn connects with a 12-inch line emptying into a 1,000,000-gallon reinforced concrete collection reservoir.

Adapting the Old Distribution System to the New System

Because of the fact that the new supply is almost in the opposite direction from the original source, considerable difficulty was anticipated in adapting the old distributing system to the most economical use of the new supply, particularly with reference to fire service. It was originally intended to flow the water by gravity from the 1,000,000-gallon collecting reservoir at the wells to the roughing basins at the filter plants a distance of about 5 miles, from which it was to be pumped through the old pressure lines to the city.

Mature consideration disclosed the fallacy of this plan, and, with the cooperation of the Underwriters, it was shown to the city that better fire protection and more efficient operation could be secured, as well as considerable saving made in the first cost, if the orginal plant should be abandoned or rather kept as a standby unit and an entirely new pressure line and pumping-plant constructed from the new supply direct to the city.

Following out this idea, a new pumping plant was designed near the site of the new reservoir. This plant consists of duplicate 4,000,000-gallon high-pressure pumps of the horizontal centrifugal motor-driven type manufactured by the American Well Works Co. These pumps deliver the water through 2¾ miles of 20-inch high-pressure lines direct to the new 500,000-gallon water-tower located in the residential section of the city, from which the water is conducted to the heart of the original distributing system by a 14-inch line and a number of 6-inch and 8-inch cross-connecting

A Question of Costs

It is the intention of this article to discuss the feasibility of substituting ground water-supplies for filtered water-supplies in cities requiring a large volume of water. The article sets forth the reasons for the change recently made in Shawnee, Okla., the methods used in locating the supply, its development, comparative qualities of the two waters and saving in operating expenses, together with the necessary changes required in adapting the new supply to the city's distribution system.

lines converting the old 3,000,000-gallon roughing basin into a storage reservoir for emergency, thus precluding the necessity of ever pumping river water in case excess demands were made upon the supply.

The old 100,000-gallon water-tower was left in service by means of an altitude valve, sufficient funds being provided for repainting and roofing the structure.

Cost of New Water-Supply

The total cost of the water-supply proper, consisting of the wells, collecting reservoir, high-pressure pumping-plant and the 2¾ miles of 20-inch pressure line to the city, amounts to $191,000. The remainder of the bond issue of $586,000 was expended on improvements within the city, consisting of 26 miles of distributing lines and the 500,000-gallon water-tower and numerous other small additions.

The results secured by the development of the new ground water-supply have proved most gratifying to the city. Not only has it eliminated the yearly expenditure of from $25,000 to $30,000 by the citizens for bottled water, but has materially reduced the operating costs and supplied a much higher quality of water.

Old and New Supplies Compared

A comparison of the present water and that of the old supply is as follows:

	Filtered Water-Supply	Ground Water-Supply
Chlorine	212 parts	28 parts
Hardness	266 "	61 "
Totals solids	753 "	123 "

In addition to the improvement in the quality of the water, the difference in elevation of the location of the wells on the old supply has reduced the pumping head from 230 feet to 178 feet, with a consequent reduction in power. Also, the abandonment of the filter plant eliminated the cost of chemicals and relieved the city of the labor of three filter attendants, resulting in the following saving:

Power saving per month	$215.00
Chemical saving per month	607.00
Labor saving per month	375.00
Total	$1,198.00

This, it will be noted, is equivalent to $14,375 per year, which represents about 6¼ per cent interest on the $191,000 invested in the water-supply improvements, which, when taken into consideration with the saving of the expenditure for bottled water, represents a total saving to the citizens of Shawnee of abou $40,000.

This saving represents an income of about 8 per cent per year on the total cost of $491,000, which includes the original filter cost of $300,000 and the present ground water cost of $191,000 and is sufficient to pay the interest and create a sinking-fund equal to the debt in about 20 years, which would seem ample justification for the substitution of the ground water-supply for the filtered supply, irrespective of the improvement in the quality of the water.

ACKNOWLEDGMENT.—From a paper presented before the American Water Works Association.

Boulevard Construction in Pasadena

By W. E. BARNEY
ASSISTANT ENGINEER, PASADENA, CALIF.

PASADENA has recently completed the construction of Linda Vista Avenue, one of its main boulevards, through a residential district which is located along the west bank of a wide canyon known as the Arroyo Seco and at the foot of the San Rafael Mountains. This gives an additional outlet for traffic to the fertile San Fernando Valley via Flintridge, Sunland and Tujunga.

A large portion of the construction required the making of heavy cuts and fills and provision for cross-drainage from the adjacent mountains. In crossing Cottonwood Canyon, a 300-foot length of 30-inch diameter Armco corrugated culvert pipe was used through a fill 50 feet in depth. To obtain street drainage, reinforced concrete catch-basins with curb intake and corrugated pipe well connected to the 30-inch pipe were used.

At the north end of the boulevard and near the Devil's Gate flood-control dam another corrugated culvert pipe was carried through a reinforced concrete retaining wall. This wall, which was 440 feet in length and varied from 3 to 50 feet in height, was constructed along the west bank of the precipitous Arroyo Seco, the channel of which is from 100 to 250 feet below the elevation of the pavement.

RETAINING WALL, SHOWING CULVERT PIPE

This wall is shown in one of the accompanying illustrations. In design, the wall consisted of L-shaped cantilever and counterforted types, and along the top Page Highway Guard fence was installed. The fabric was fastened to steel posts by No. 6 gage wire clamps, the posts being grouted into steel pipe sleeves set in the curb, which was constructed as a part of the retaining wall. Ornamental knobs were placed in the top of each post, both posts and fabric being painted white, except the knobs, which were painted black.

ROADWAY AND GUARD FENCE

That it was necessary to adequately protect motorists at this point is evidenced by the fact that even at this early date the chain-link guard and curb have been called into service by a speeding car over which a driver had lost control. Without the chain link guard, this car would have plunged to the sloping bank 50 feet below.

W. C. Earle is City Engineer and Superintendent of Streets, J. H. Allin is Deputy City Engineer, and the work was designed under the direction of W. E. Barney. J. E. Haddock of Pasadena was the contractor.

Quote Freely from This Magazine

It is not copyrighted. But please give credit to THE AMERICAN CITY.

Municipal Power Is Coming Back

By R. H. BACON

IN the early days of electric light and power development in the United States, the municipally owned plant was a necessity. In order to provide electric service in the smaller cities and towns, it was essential for the municipality to undertake the development. In those days the possibility of adequate return on the capital invested in a light and power plant was rather dubious. The establishment of service was the primary consideration, and the development of this service was looked upon in much the same light as the development of the water-supply service.

Super-power and Propaganda Make Many Cities Sell Out

The small steam plant was not efficient and the costs of generation and distribution were high. Even with high rates, the municipal plant frequently showed losses which were charged off with increased taxes. In the meantime the steam turbine had been developed, and its efficiency in large units made possible the generation of power at centralized points with distribution through transmission networks. From this time on, larger and larger plants were developed, systems were interconnected, and super-power with all its ramifications came into existence.

Municipal power at this time began to decline in popularity with the taxpayers. Well-organized propaganda led the average citizen to believe that electric light and power was the one commodity whose cost was declining in an age of constantly increasing cost of living. More organized propaganda made it appear that the municipal plant idea was fundamentally unsound, a burden on the taxpayer, and that it was logical to entrust this service to a private organization with unlimited capital, tremendous engineering facilities, and genius for organization. Then came a substantial cash offer for the municipal plant, and the citizens flocked to the polls to vote in favor of relinquishing this phase of municipal service. Thus hundreds of cities passed from municipal ownership to service from private companies.

Factors in a Changing Attitude

Now the municipalities are awakening and the return of the municipal plant is being aided by several very favorable factors.

One of these factors is the diesel engine. For the first time in the history of power development it is possible to build a small diesel engine power plant that can compete with the largest public-utility plant. With the costs of distribution added to the cost of generation at the big plant, the small plant in many cases actually shows lower costs.

Another factor which has influenced the return of the municipal plant is the fact that the profits in utility operation are going out of the city. When the utilities took over the municipal plant, it was usually closed down and the town was served from a transmission system. With practically no investment in the town itself, that portion of taxes was lost. Without an employee in the town, except possibly a bill collector, the utility contributed little to the support of the community. All the money paid for service was scattered far and wide.

All of this has built up an increasing sentiment for the municipally owned light and power plant.

Photographs by courtesy of Fairbanks, Morse & Co., Chicago

NEW BUILDING OF HARLINGEN, TEXAS, MUNICIPAL ELECTRIC PLANT, PAID FOR OUT OF EARNINGS

The Efficiency of Small Plants

In order to understand why the diesel engine is making such rapid progress in the municipal power field, it is necessary to understand something about this type of equipment and why its operating costs are low. The diesel engine burns low-grade fuel oil and burns it at remarkably high efficiency. The average small steam plant has an over-all efficiency of from 6 to 8 per cent. This means that only 6 to 8 of every 100 heat units in the fuel are turned into useful work. The diesel engine, however, has a thermal or heat efficiency of over 30 per cent, which means that one-third of the heat in the fuel oil comes out as power.

In the diesel engine the fuel oil is injected into the cylinder by means of nozzles that atomize the oil. The engine differs from a gasoline engine, as no ignition devices of any kind are required. The oil charge is ignited by the heat of compression and burns within the cylinder.

In the steam plant, the efficiency in operation depends to a great extent on the efficient burning of coal under the boilers. The amount of coal burned depends on the care used in firing and on the proper care of the boilers. The diesel engine, on the other hand, eliminates the personal element, for the efficiency of the engines does not depend on the operators.

In steam plants there is coal to be handled, there is smoke from the stack, and there are ashes which must be taken away. The diesel engine eliminates this smoke and dirt, and with modern silencers on the exhaust is absolutely noiseless in operation.

The diesel engine also has another important advantage that is one big reason why it is so highly approved for small plants; it is just as efficient in small sizes as in large and has high efficiency at partial loads. The steam plant, on the other hand, is much more efficient in large stations. It is for this reason that the public-utility companies have built enormous generating stations for

INTERIOR OF LAMAR, MO., MUNICIPAL ELECTRIC PLANT
Two diesel engines of 240 and 360 hp., respectively

the distribution of power from central points. The efficiency of the steam plant drops very rapidly as the load drops off.

Simplicity of Construction and Operation

Simplicity is one of the outstanding features of the modern diesel engine. It has remarkably few parts and is exceedingly simple to operate. Since it has no ignition system, it is actually simpler than the automobile engine. The two-cycle type of engine, which has come into widespread use for municipal service, has no exhaust or inlet valves, and so there are no valve troubles of any kind to contend with. Operators who have worked in steam plants have no difficulty whatever in mastering the diesel engine. It eliminates the hardest part of operating a power plant—the firing of coal and the handling of ashes. The engine room of a diesel plant is a cool and quiet place, and the duties of the operators are confined largely to keeping proper records of kilowatt-hour output, fuel and lubricating oil consumption and similar details.

Modern diesel engines are actually more reliable and the service is less subject to interruptions than is the case with steam engines. It is not uncommon at all for diesel engines to run night and day for a month at a time without a single stop. There have been many instances where diesels have been operated more than a year in continuous service.

The diesel engine is an extremely rugged machine and has very few operating parts subject to wear. This means an extremely long life. The first diesel engines were installed in this country around 1900, and it is interesting to note that all of these old engines are still in service. There was a time when engineers questioned the life of diesel engines, but engineers today are almost unanimous in the opinion that the life of such a machine, in considering depreciation, should not be taken at less than twenty to twenty-five years.

That the low operating cost of diesel engines is not imaginary is shown by the excellent records which these engines have established in municipal service throughout the country. There are now more than 1,000 cities, towns and villages in the United States equipped with diesel-engine power plants. Last year the number of plants increased to a marked degree, and this year the development continues at an even more rapid rate.

Lamar Installs Diesels Instead of Purchasing Power

In the early part of 1927, the city of Lamar, Mo., was about to give up the operation of its steam plant because of the high cost of operation and poor service. Citizens of the community had just about decided to purchase power from a public utility when they became interested in diesel power, and purchased 240 and 360 horsepower units.

That the diesel plant is more than meeting expectations is shown by a recent article in the *Lamar Daily Democrat* in which the City Clerk, C. R. Redford, gave a comparison between the cost of operating the old plant and the new.

In March of 1927 the operating expense with the steam plant was as follows:

Labor	$693.00
Supplies	249.12
Fuel	1,652.32
	$2,594.44

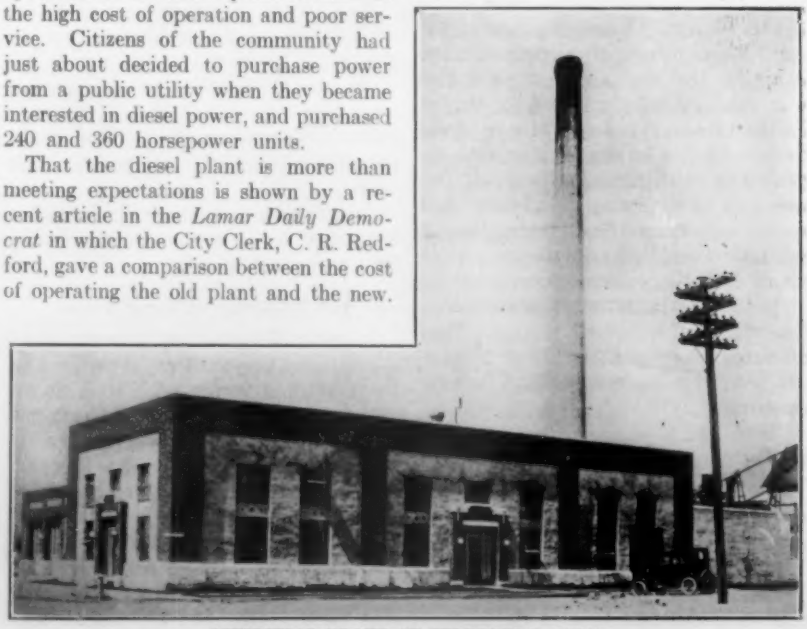
In March of this year the diesel plant showed the following outlay:

Labor	$465.00
No expense for supplies	
Fuel and lubricating oil	338.86
	$803.86

At this rate of saving, the total reduction in operating cost for the year will be well over $20,000. The city will thus be able to make its monthly payments on the plant and make a net saving of some $8,000 per year. Lamar is thus paying for a new plant without any cost to the taxpayers and with no increase in the light or water rates.

Julesburg Cuts Operating Cost to Fraction

At Julesburg, Colo., the city had been operating a steam plant equipped with a uniflow engine, and after considerable study of the problem by a firm of consulting engineers, it was decided to install a 360-hp. diesel unit. The operating cost with the steam unit amounted to $43.39 per day and with the diesel engine the cost was $16.07 per day; and so the plant showed a net saving of $27.32 per day. Diesel engine operation has been so successful in Julesburg that the city recently purchased a second unit.



MUNICIPAL PLANT AT JULESBURG, COLO.

Falls City Adopts All-Diesel Power After Trial with New Load

About ten years ago, the city of Falls City, Nebr., installed a modern steam plant to replace its old steam plant, which had been outgrown. The new steam plant was made modern in every way and was one of the most efficient municipal steam plants in the state of Nebraska. The equipment consisted of two Corliss cross-compound direct-connected units operating condensing. The total capacity of the two units was 548 kw., one having a capacity of 180 kw. and the other of 368 kw.

In 1926 it became evident that additional power would have to be installed to meet the demand which would come on the plant during the following winter months, and on account of the high cost of generating current by steam, as compared with the cost of generating current with the diesel engine, the city decided to install diesel power. After a thorough survey of all types of power, a 720-hp. engine was selected for the plant.

The first unit had to be installed without interfering with either of the steam units, since their peak load in the early fall ran as high as 500 kw. In order to make this installation without interfering with the steam units, it was necessary to install it in the boiler-room.

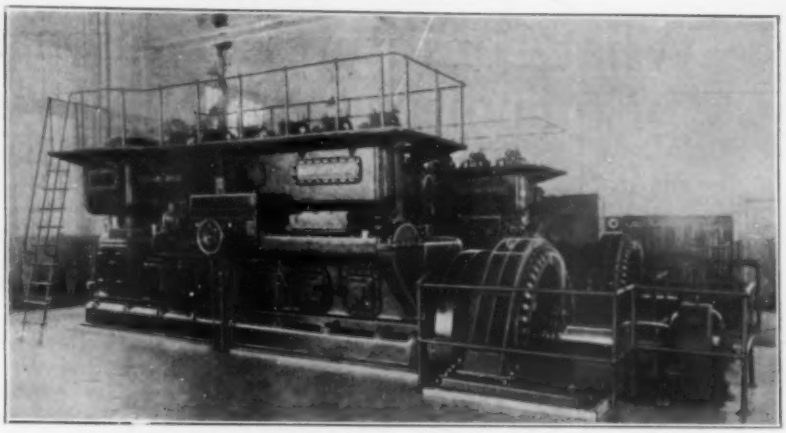
In November the unit was placed in service and operated in conjunction with the steam plant, the diesel taking the load continuously and the steam being used only on evenings when the load exceeded the capacity of the 720-hp. unit.

The plant was operated in this way until June, 1927, when the 180-kw. unit was removed and a second 720-hp. unit installed, and placed in service in September. As soon as this second unit was in, the steam unit was discontinued, and the plant since that time has operated as a diesel plant.

During the first three months of 1928, 542,510 kw. hours have been generated at a cost for fuel and lubricating oil of $3,526.92, which gives a cost of 0.65 cents per kwh. It is conservatively estimated that for the year 2,250,000 kwh. will be generated. If this were generated with steam, the cost for the year would be $37,350. This current at the present cost of 0.65 cents per kwh. will make a total for the year of $14,625, which subtracted from $37,350, will leave $22,725 as the net saving for the present year when generating this current by diesel engines against the cost of generating the same power by steam.

Use of Municipal Power Facilitated In Plans for Financing

Instances might also be cited where cities have tried out service from private companies and then gone back to municipal plants equipped with diesel engines. With a large number of franchises nearing the expiration point, there will be an increasing tendency in this direction during the next few years.



TWO 720-HP. DIESEL ENGINES IN THE MUNICIPAL PLANT AT FALLS CITY, NEBR.

Several financing plans are available which make it possible for a city to install a municipal plant or to rehabilitate an old plant without burden to the taxpayers and in many cases without issuing bonds. These plans are based on paying for the plant out of earnings. With increased profits as a result of reduced operating costs, many such plants are being paid for in a remarkably short time. Even during the time the plant is being paid for, it is possible to maintain reasonable rates, and after the investment is retired, the rates may be reduced or the profits may be used for other city improvements.

Why Public Support for Municipal Bond Issues is Sometimes Lacking

WE hear a great deal about educating the public. Maybe it would be better if the public were credited with more sense than it is assumed to have. When the daily press carries headlines about money voted for hospitals and fire departments being spent for purposes clearly not within the proper use of bond funds; when we are told daily of occurrences that show plainly the play of partisan politics, and clearly against the public interest, it is only sensible to assume that the public has knowledge of the situation and that it will act accordingly. The foolishness of the situation is that public officials will handle public affairs, and especially those involving money, in such manner as will create well-founded doubt and suspicion and then ask the same public to vote more bonds. These heated campaigns, patriotic slogans and high-pressure salesmanship methods may not be nearly as educative to the public as would an administration of city affairs entirely free from mismanagement or suspicion, and such as would convince the public that *a public office is a public trust and not a party trust*, two things that are vastly different.

The public is a hard taskmaster, is suspicious, and during the years has been trained to suspect wrong even where wrong does not exist; so even our most efficient and capable officials have a hard time getting by without criticism or charges of graft and corruption. There is a reason for this, and the history of municipal government in this country is ample cause for a suspicious and fault-finding public.

The cure for it is not to assume that the public needs educating, but will be found when our municipal governments are conducted on such high planes of efficiency and honesty as will give no cause for complaint. As long as municipal business is conducted on a basis of benefit to the party and as long as our public officials are under the suspicion of boss control, it will be difficult to "educate" the public to a keen liking for bond issues, and the attempts to carry such issues purely as a party measure only adds to the distaste for bond issues. . . . It seems to me that the one great handicap to an orderly working out of a plan that can be followed through the years is partisan politics, and I firmly believe that unless we can eradicate this evil, the result must be spasmodic, expensive, and far short of the real needs of the community. Kidnappings, improper handling of ballot boxes, and all the tricks which accompany our elections are not done in the interest of the public, and if the public is to be educated to like bond issues, there must be a radical change in text book, and the teachers must be other than partizan office holders and ward bosses.

LOUIS R. ASH, in a paper on the financing of a ten-year program, delivered at the Conference on Municipal Government held recently in Kansas City, Mo., under the auspices of a group of local organizations of which the League of Women Voters took the lead.

What Constitutes a Reasonable Recreation Equipment to Be Supported by Public Tax Money?

IN any given city this question cannot be answered intelligently until three rather distinct steps have been taken. The first is to determine what would be an *adequate* program of public recreation for that community; the second is to decide to what extent, if at all, under existing conditions, the adequate program must be curtailed so as to become a *reasonable* program; the third is to educate the appropriating body or the voters, or even the state legislature if new recreation laws are needed, to the end that the reasonable program may speedily become an actually *effective* program.

An Adequate Program

An adequate program of community recreation would involve a much closer coordination than exists in most cities between the public school system and the recreation department of the city. Leading educators and city planners appear to be approaching an agreement that to provide for the proper setting of school buildings for adequate playground space and for possible future expansion, five acres should be assumed as the minimum desirable size of plot for new elementary schools; ten acres for new junior high schools; and twenty acres for new senior high schools; even larger plots being regarded as desirable wherever the community can be educated to support such a program.

In cities where existing school sites are too small for adequate play space, the municipality should provide, in each school district, the lacking recreation area.

For children of less than senior high school age each playground, to function properly, should be hard-surfaced, landscaped and planted, and should have three main space divisions. The first of these, planned for children from 5 to 11, should be well supplied with playing equipment, and have efficient supervision. The two other divisions, devoted to play for boys and girls of the 11 to 15 years group, would normally require more organization and leadership for activities, and perhaps less set equipment. Every playground should have a shelter house, unless there is a school building that can serve the purposes at all seasons.

In every senior high school district, in connection with the school or otherwise, a larger playing field should be designed with special thought for the older young people. This should be equipped for baseball, football, basket-ball, volley-ball, tennis, and track athletics.

In addition to these playing spaces, there should be a neighborhood or general community recreation park where opportunities are provided for swimming, skating, coasting and other pastimes for mixed age groups. And somewhere in the park system or in connection with playing fields, if the program is really an adequate one, there will be one or more municipal golf courses, and a stadium for important athletic events; perhaps an outdoor theater; and certainly field houses or community houses equipped for indoor games, club meetings, dramatics, and other indoor activities—to only such an extent, however, as these cannot be provided by a wider use of the school plant outside of school hours. And a wider use of the outdoor recreation facilities will be made possible by adequate lighting for use after sundown.

"Things and Their Use for Enriching Life"

was the general theme of the Recreation Congress held at Atlantic City, October 1-5, under the auspices of the Playground and Recreation Association of America. At the final session of this important gathering, the accompanying statement was presented as the report of a section meeting which had been studying and discussing the problem of reasonable recreation programs.

A Reasonable and Effective Program

With these as the ideals, how can the question of reasonableness and practicability be answered? Partly by working out, with the assistance of a field representative of the Playground and Recreation Association of America, or of a competent city planner, a five- or ten-year program of recreation needs and financial requirements. And partly by a campaign of public education. The voters in most of our cities need to be shown in a dramatic and convincing manner that mere economy is not the chief attribute of a well-run city government. The forward-looking playground advocate will not be content merely with re-cutting the pattern of municipal expenditures to fit what seems to be the existing cloth; he will work rather for the production of more cloth to fit what he believes to be an adequate pattern.

But while working for bond issues for playground sites and recreation structures, and for larger appropriations from current revenue for maintenance and supervision, he will not neglect other sources of revenue. In almost any community having a fair sprinkling of wealthy and public-spirited citizens, a well-organized effort to improve public recreation facilities will bring forth gifts of land or buildings from private sources. And certain facilities, once the initial capital expenditure is provided by bond issue or otherwise, can be made nearly or quite self-sustaining. This is true of swimming pools, tennis courts, and municipal golf courses. A study recently issued by the Public Links Section of the U. S. Golf Association, for example, showed that of 226 public golf courses reported, at least 90 are self-sustaining or more so.

In general, the question of reasonableness will be solved by providing facilities which will serve large groups before attempting to serve small groups. Such procedure would give children's playgrounds the first right-of-way. Then baseball would take precedence over tennis, and tennis over golf. Skating-rinks would be provided before ski-jumps. Showers and sanitary toilet facilities would be provided in field houses or school buildings before swimming pools were built. The accomplishment of these first steps would almost inevitably lead to public willingness to support with increasing expenditures the big ideal program of a well-rounded recreation system.

Simultaneously with the educating of the public to demand adequate recreation facilities, and of the city and school officials to provide them, may well go a campaign of education among the real estate subdividers. It can be, and in some places is being, demonstrated that the subdivider can actually make more money by giving 10 to 15 per cent of his land for recreation purposes than to cut it all into building lots.

Along such lines as these, through public and private action, if the local campaign is conducted with intelligence and tact and persistence, the day will be brought steadily nearer when an adequate recreation program will be considered the only reasonable recreation program, and will therefore be made the actually effective recreation program for that community.

Recommendations as to Street Traffic Signs

From the Forthcoming Report of the American Engineering Council's Committee on Street Traffic Signs, Signals and Markings

ADEQUATE signs are great aids to the drivers of vehicles and are therefore important means of safeguarding and expediting traffic. To be adequate, every traffic sign should be so thoughtfully designed and so carefully placed as to convey its message quickly and clearly at the exact time and place it is needed. These requirements mean simple wording; standard shape, color, lettering and location; announcement of the official authority if that is legally required; and the removal of every unofficial sign that in any way conflicts with the requirements. No matter how effectively traffic signs many be designed and placed, the results desired will not be realized until the messages conveyed are carefully observed by drivers and the regulations implied are zealously enforced. With these facts in mind, the committee has formulated and here submits some basic essential recommendations concerning the design, location and use of street traffic signs.

RECOMMENDATION 1.—*Material and Finish*

(a) Select sign material and finish first for durability, second for economy.

(b) Use cast metal (either iron or aluminum), sheet metal (either steel or aluminum), or wood; *here named in the order of preference.*

(c) For all signs use the specifications proposed by the Joint Board on Interstate Highways of the Bureau of Public Roads, the American Association of State Highway Officials, and the United States Bureau of Standards. (See Appendixes A and B.)

RECOMMENDATION 2.—*Shapes and Dimensions*

The following shapes shall be used for the purposes indicated:

Railroad Crossing	Crossbuck
Railroad Crossing Approach	Circular
Stop	Octagonal
Slow	Diamond
Caution	Square
One Way and Detour	Arrow, or Arrow on Rectangle
Information	Rectangular
Restriction	Rectangular

All signs should be made in the dimensions hereafter specified, if possible, but existing equipment that varies somewhat from the specifications may be used, provided the general proportions are the same. Most of these dimensions are smaller than those given in the code of the American Association of State Highway Officials, because vehicles generally move slower in city traffic than on rural highways, and signs may be seen at shorter distances in cities; also because smaller signs occupy less space and do not so seriously interfere with the vision of pedestrians if placed below their average height.

RECOMMENDATION 3.—*Colors*

The combinations of colors here specified shall be used for the purposes indicated:

Railroad Crossing, Black letters on white background.

Railroad Crossing Approach, Black letters on yellow background.

The Long-Awaited Report

of the Committee on Street Traffic Signs, Signals and Markings of the American Engineering Council is to be published this month. Because of its outstanding importance to all interested in the facilitation and safety of street traffic,* THE AMERICAN CITY *has volunteered to cooperate with the American Engineering Council in making the Committee's recommendations available to all readers of the magazine. To this end the complete report (with the exception of the introductory paragraphs and the appendix) will be published in three instalments.

As the illustrations of the different types of signs described in this first instalment were not all available when the present issue was sent to press, only four of them are reproduced this month (page 148), and the others will be published in the December issue.

The complete document will soon be available in pamphlet form, on application to the Council's Executive Secretary, L. W. Wallace, 26 Jackson Place, N. W., Washington, D. C.

Stop, Red letters on yellow background.

Slow, Black letters on yellow background

Caution, Black letters on yellow background.

One Way and Detour, Black letters on white arrow.

Information, Black letters on white background.

No Parking, Red letters on white background.

Limited Time Parking, Green letters on white background.

Pedestrian Restriction, Blue letters on white background.

Other Restrictions, Black letters on white background.

The colors recommended above for stop signs combine a yellow background with red for the word "Stop," in conformity with the generally recognized meaning of that color in traffic-control devices of other types. This combination avoids the disadvantage of black letters on a yellow background, recommended by the Joint Board of Interstate Highways, in which the black letters cannot be made luminous at night, a disadvantage that has led to the modification of the sign by the introduction of a black band across the sign, on which is imposed the word "Stop" in white letters, making a three-color combination.

The stop sign recommended above also avoids the disadvantage of white letters on a red background, proposed by the Traffic Signal Color Code Committee, in which the red background is not clearly visible at night and the letters if illuminated appear white instead of red.

RECOMMENDATION 4.—*Lettering and Wording*

The lettering, wording and arrangement here specified shall be used for each type of traffic sign, but symbols may be added or equivalent words may be substituted if the standard size and arrangement are maintained. Suitable wording in small letters expressing local authority shall be placed on the bottom of all signs when specified by law or regulation.

RECOMMENDATION 5.—*Illumination*

All important traffic signs shall be clearly visible day and night. Signs that affect the safety of night driving should be adequately illuminated. Certain important directional signs that are intended primarily to facilitate traffic may be illuminated at night. In this report, signs that require illumination at night are specifically mentioned.

This illumination shall be provided by one of the methods listed below, *named in the order of preference.*

(a) Attached lamps flooding the face of the sign

(b) Self-luminous letters

(c) Signs so located as to be illuminated by street lights

(d) Reflecting letters illuminated by headlights of vehicles

Method (a) provides a positive means of illumination. Method (b) is less positive because of the possible accumulation of dust on the translucent lenses. Method (c) is subject to the distance from the street lights, improper angles, swinging branches and other interferences. Method (d) is limited in use, as indicated under Recommendation 7.

If beacon lights are used in conjunction with signs, the color of the beacon lights should conform to the code of the color meanings for Beacon Signals given on page —.

RECOMMENDATION 6.—*Maintenance*

All traffic signs shall be continuously kept in good order and clearly legible.

RECOMMENDATION 7.—*Height and Location*

Traffic signs shall be located with due regard to the character of the message to be conveyed, in order to obtain the maximum observance. The location of a sign giving warning of a hazard just ahead may be quite different from that of a sign giving an order to be obeyed at a particular point.

For the locations indicated below, the signs shall be at the heights specified:

(a) The center of a sign on a fixed post 12 inches back of the curb shall be 8 feet above the pavement and shall not overhang the curb.

(b) The center of a sign on a movable post in the roadway shall be 4 feet above the pavement.

(c) The center of a reflecting sign used to mark an obstruction in the roadway shall be 3 feet above the pavement.

The location of curb signs at a standard height of 8 feet is required in order to insure their visibility above pedestrians and vehicles. For the illumination of such signs, dependence cannot be placed on headlights only.

Specifications for Certain Signs

The following specifications are recommended for signs at the places indicated.

Railroad Crossing and Railroad Approach Signs

The specifications for railroad crossing and railroad crossing approach signs are taken from the code adopted by the American Railway Association. It is recommended that they be used as standards where they do not conflict with state laws and that state laws that do conflict be amended.

RECOMMENDATION 8.—*Railroad Crossing*

(a) A railroad crossing sign shall be made of two arms mounted across each other in inclined positions to form a crossbuck.

(b) The sign shall be placed not more than 15 feet from the railroad crossing.

(c) The letters shall be in black on a white background.

The railroad standard code provides two alternative locations for a sign, one at the side and one in the center of the highway. The location in the center is dangerous *and is not recommended.*

RECOMMENDATION 9.—*Railroad Crossing Approach*

(a) A railroad crossing approach sign shall be circular, 24 inches in outside diameter, and shall have a bead border around the edge.

(b) The sign shall be divided into quadrants by one horizontal and one vertical line 2½ inches wide.

(c) A letter R, 5 inches high by 3¾ inches wide, shall be placed in each of the upper quadrants.

(d) The sign shall be placed 100 feet or more from the railroad crossing.

(e) If there is a street intersection within 100 feet, an additional sign or signs shall be so placed as to warn traffic approaching the crossing from each intersecting street.

(f) The sign shall be clearly illuminated at night.

(g) The letters shall be in black on a yellow background. (Some states require white instead of yellow.)

Stop Signs

RECOMMENDATION 10.—*Stop Signs—General Specifications*

A stop sign shall be octagonally 18 inches or 24 inches in outside diameter, as may be best suited to the location. The octagon shall be mounted with two sides horizontal and shall have a bead border around the edge.

(b) The word "Stop," in 5-inch letters, shall be approximately centered on the horizontal center line of the octagon. (See Figure 1.)

(c) The upper and lower spaces may contain specific messages in 2-inch letters, as indicated in recommendations 11 to 15, except that if a reflecting, fixed or automatic illuminating device is introduced into the sign, the outline, size, margin, color scheme and the height, shape and spacing of lettering of principal words shall be retained and the design otherwise adjusted to fit the particular installation.

(d) The stop sign shall be placed at the point where the message is to be obeyed. At intersecting streets this point is on the property line of the protected street.

(e) A stop sign shall be clearly illuminated at night and shall be visible for a distance of 100 feet.

(f) The letters shall be in red on a yellow background.

RECOMMENDATION 11.—*Through Traffic Street*

A stop sign (Figure 1) bearing the words "Through" and "Traffic," or equivalent terms, in the message space shall be used at every intersection on a through traffic street except those controlled by signals.

RECOMMENDATION 12.—*Dangerous Intersection*

At dangerous intersections where a stop is mandatory, use the stop sign (Figure 1), bearing the words "Cross" and "Street" in the message space.

RECOMMENDATION 13.—*Dead End Street*

On a street that ends with no outlet, use the stop sign (Figure 1) bearing the words "Street" and "End" in the message space. This sign is not to be used at "T" or "L" street intersections. (See Recommendation 22.)

RECOMMENDATION 14.—*Street Closed*

To close a section of a street temporarily, use the stop sign (Figure 1) bearing the words "Street" and "Closed" in the message space.

RECOMMENDATION 15.—*Signs for Other Locations*

For all other locations at which vehicles should stop before proceeding farther, use the stop sign (Figure 1), bearing a descriptive message. Example: "Car Line."

Slow Signs

RECOMMENDATION 16.—*Slow Signs—General Specifications*

(a) A slow sign (Figure 2) shall be a diamond formed by turning one diagonal of an 18-inch square to a vertical position. The sign shall have a bead border around the edge, and the corners may be rounded for safety (Figure 4).

(b) The word "Slow" may be placed in 2-inch letters at the top, or a flashing yellow beacon light may be used in the center of the upper space.

(c) Any specific message, such as is indicated in subsequent recommendations, shall be placed approximately in the center of the diamond, in 5-inch letters if one line is used, and in 4-inch letters if two lines are used.

(d) If a symbol is used in addition to the word message, the words shall be centered a little above the horizontal center line of the diamond, so as to provide ample space for the symbol below the words.

(e) In order to give adequate warning of a hazard, a slow sign shall be placed sufficiently in advance of the point where the potential danger begins.

(f) The letters shall be black on a yellow background.

RECOMMENDATION 17.—*Safety Zone*

(a) The slow sign (Figure 2), with the words "Safety Zone" in two lines in the message space and a horizontal arrow pointing to the right below the words shall be used at every safety zone where traffic is prohibited from passing to the left. Where traffic is allowed to pass on both sides, a double-headed arrow shall be used on such a sign.

(b) The sign shall be placed at the end of the zone that the traffic approaches. (See section on Safety Zones, p.—.)

(c) The sign shall be illuminated at night.

RECOMMENDATION 18.—*Street-Car Crossing*

(a) The slow sign (Figure 2), with the words "Car Line" in two lines in the message space, shall be placed at every crossing that is sufficiently hazardous to require caution.

(b) The sign shall be illuminated at night.

RECOMMENDATION 19.—*Cross Street.*

(a) The slow sign (Figure 3), with the words "Cross Street" in two lines in the message space and a symbol below to indicate the type of street intersection (+ or -| or |-), shall be placed at every crossing which is especially hazardous and requires unusual caution but does not warrant a stop sign.

(b) The sign shall be illuminated at night.

RECOMMENDATION 20.—*Hill*

(a) At the beginning of a down grade of 6 per cent or more, use the slow sign (Figure 4), with the word "Hill) in the message space.

(b) For grades exceeding 10 per cent, the word "Hill' shall be placed somewhat above the center of the sign, and the words "Steep Grade" shall be placed below it in 2-inch letters.

(c) The sign shall be illuminated at night.

RECOMMENDATION 21.—*Curve*

(a) At every curve having a radius of not more than 600 feet where the conditions require a reduction of speed, use

the slow sign (Figure 5) bearing the word "Curve" in the message space and a curved arrow in the lower space indicating the direction of the curve.

(b) The sign shall be illuminated at night.

RECOMMENDATION 22.—*Traffic Turn*

(a) At a turn having a radius of less than 200 feet, use a slow sign (Figure 6) bearing the word "Turn" in the message space and a bent arrow in the lower space indicating the direction of the turn.

(b) At a "T" intersection, the directions that may be followed shall be shown by a double-pointed arrow indicating both directions.

(c) The sign may be used at the approach to a regular street intersection where the main flow of traffic makes a sharp turn.

(d) The sign shall be illuminated at night.

RECOMMENDATION 23.—*Other Locations*

Use slow sign with descriptive message for all other conditions that require vehicles to proceed at reduced speed. For example, "Narrow Bridge" and "Viaduct Approach."

Caution Signs

RECOMMENDATION 24.—*Caution Signs—General Specifications*

(a) A caution sign (Figure 7) shall be an 18-inch square mounted with the sides in horizontal and vertical positions. The sign shall have a bead border around the edge and the corners may be rounded for safety.

(b) The word "Caution" may be placed in 2-inch letters at the top, or a flashing yellow beacon light may be used in the center of the upper space.

(c) Any specific message, such as is indicated in subsequent recommendations, shall be placed approximately in the center of the square, in 5-inch letters if one line is used, and in 4-inch letters if two lines are used.

(d) If a symbol is used in addition to the word message, the words shall be centered a little above the horizontal center line of the square so as to provide ample space for the symbol below the words.

(e) In order to give adequate warning of a hazard which is intermittent, a caution sign shall be placed sufficiently in advance of the point where the potential danger begins.

(f) The letters shall be black on a yellow background.

RECOMMENDATION 25.—*School Zone*

At each end of a school zone use the caution sign (Figure 7) with the words "School Zone" in the message space.

RECOMMENDATION 26.—*Playground Zone*

At each end of a playground zone use the caution sign (Figure 7) with the words "Play" and "Ground" in two lines in the message space.

RECOMMENDATION 27.—*Other Locations*

At every place where vehicles should proceed cautiously use the caution sign bearing a descriptive message. Examples, "Theater exit," "Church zone," "Men working," "Street repair."

One-Way and Detour Signs

RECOMMENDATION 28.—*One-Way Signs—General Specifications*

(a) A One-Way Sign (Figure 8) shall be arrow-shaped, 30 inches long by 6 inches high, or rectangular, 36 inches long by 8 inches high, with an arrow 30 inches long by 6 inches high on a black background. In either case the arrow shall be white with black letters.

(b) The message words, in 3-inch letters, shall be centered on the center line of the arrow.

(c) Care shall be taken to fix the sign so firmly that it cannot be turned in the wrong direction.

RECOMMENDATION 29.—*One-Way Street*

(a) On all four corners of every street intersection where one-way traffic regulations are in force use a one-way sign (Figure 8), with the words "One-Way" on the face of the arrow.

(b) If the traffic at the intersection is controlled by an automatic signal the one-way sign shall be made a part of the signal.

(c) On a very narrow one-way street the arrow may be placed on only one or two corners of the street.

(d) The sign shall be illuminated at night.

RECOMMENDATION 30.—*Detour*

(a) A One-Way Sign (Figure 8), with the word "Detour" on the face of the arrow, shall be placed at the point where a detour begins and at all intersections and other points where any question might arise as to the course of the detour.

(b) At the point where a detour begins, a temporary direction sign or route marker placed immediately below the detour sign is recommended to indicate the various destinations that are to be reached by following the detour instructions.

(c) The sign shall be illuminated at night.

Information Signs

RECOMMENDATION 31.—*Information Signs—General Specifications*

(a) An information sign (Figure 9) shall be rectangular, with both dimensions multiples of 6 inches, and shall have a bead border around the edge. The corners may be rounded for safety.

(b) The horizontal dimension shall be less than the vertical dimension unless otherwise specified.

(c) The letters shall be black, on a white background.

RECOMMENDATION 32.—*Keep to Right*

A sign (Figure 9) measuring 12 inches by 18 inches and bearing the words "Keep to Right," in 4-inch letters, shall be placed at the point where the message is to be obeyed.

RECOMMENDATION 33.—*No Turn*

(a) A sign (Figure 10) measuring 12 inches by 18 inches and bearing the words "No Turn" or "No Left Turn" or "No Right Turn," in 4-inch letters, shall be placed at the point where the message is to be obeyed.

(b) If the intersection is controlled by an automatic signal, the sign forbidding the turn shall be attached to the signal and illuminated at night. The dimensions may be reduced to fit the signal housing, but the letters shall not be smaller than 2 inches.

(c) The sign shall be illuminated at night.

RECOMMENDATION 34.—*Dead End Street*

(a) A sign (Figure 9) measuring 12 inches by 18 inches and bearing the words "Dead End Street," in 4-inch letters, shall be placed at the entrance to a street having no outlet.

RECOMMENDATION 35.—*Direction*

(a) A sign indicating direction, measuring 18 inches by 24 inches, or proportionately larger if necessary, to carry the message required, shall be so placed that it will be seen by a driver before he reaches the point at which he should take the direction to be followed. Such a sign is not intended to replace a standard highway route marker.

(b) The important items of the message shall be given in 4-inch letters and explanatory items in 3-inch or 2-inch letters, the size depending upon the number of words used.

(c) An arrow about 18 inches long shall be placed below the message to indicate the direction to be taken. If two directions must be indicated, a separate arrow should be used for each.

(d) The sign shall be illuminated at night.

RECOMMENDATION 36.—*Speed Limit*

(a) A sign (Figure 11) 30 inches high by 24 inches wide, or a sign 24 inches by 18 inches wide, shall be used at the point where the speed limit indicated begins. The larger sign shall be used at all entrances to cities, the smaller at other selected places within the city. Where used to restrict speed on a street within a city, speed limit signs shall be placed at intervals required by law or regulation. At the end of the restricted speed zone there shall be a sign showing the speed of the next zone, or a sign 24 inches by 18 inches in size bearing the words "End of ——— Speed Limit." At the end of the restricted speed zone there shall be a sign showing the speed of the next zone or a special sign, 24 inches by 18 inches in size, bearing the words "End of ——— Speed Limit." On this special sign the word "End" and the figure indicating the speed shall be 6 inches high and the words "Speed Limit" shall be 4 inches high.

(b) On the regular Speed Limit Sign the words "Speed Limit" in two lines of 4-inch letters shall be placed at the top, the numerals showing the limit shall be 6 inches high, and shall be placed slightly below the center, and the word "Miles" in 4-inch letters at the bottom.

(c) The sign shall be illuminated at night.

RECOMMENDATION 37.—*Quiet Zone*

At each end of a quiet zone use a sign measuring 18 by 18 inches, with the word "Hospital" in 5-inch letters slightly above the center, and the word "Quiet" in 4-inch letters below it.

RECOMMENDATION 38.—*Other Purposes*

(a) Information signs shall be used to convey any other necessary information,

in conformity with the general specifications for information signs. Their dimensions shall be 12 inches by 18 inches, if possible.

Restriction Signs

RECOMMENDATION 39.—*Restriction Signs —General Specifications*

(a) A Restriction Sign shall be rectangular, 12 inches wide by 18 inches high, with the principal words in 3-inch letters at the top, and any necessary explanatory words below in 1-, 2-, or 3-inch letters, the size of the letters depending on the number of words used. The sign shall have a bead border around the edge, and the corners may be rounded for safety.

(b) The sign shall be placed at the point where the message is to be obeyed.

(c) Where the restriction is to apply continuously for a considerable distance, the signs shall be placed at intervals of about 100 feet.

(d) The wording shall indicate the extent of the application; for example, "In This Block."

(e) Colors: (a) "No Parking," red letters on a white background; (b) "Limited Time Parking," green letters on a white background; (c) "Pedestrian Restriction," blue letters on a white background; (d) Other Restriction signs, black letters on a white background.

RECOMMENDATION 40.—*No Parking*

In places where parking is to be forbidden, use a restriction sign (Figure 12) with the words "No Parking" at the top and with time limits or other qualifications, if any, below.

RECOMMENDATION 41.—*Street Intersection*

At a street intersection use a restriction sign (Figure 12) with the words "No Stopping" at the top, and the words "Here to Corner," in 3-inch letters, below.

To avoid the erection of an additional post, a sign reading "No Stopping Within —— Feet of Corner," affixed to an existing pole or tree, may take the place of this sign. In such a case the point beyond which stopping is prohibited shall be indicated on the pavement or curb.

RECOMMENDATION 42.—*Fire House Zone*

In a fire house zone use a restriction sign (Figure 12) with the words "No Stopping" at the top, and the words "Fire House" in 3-inch letters below.

RECOMMENDATION 43.—*Loading Zone*

In a loading zone use a restriction sign (Figure 12) with the words "No Parking" at the top, and the words "Loading Zone" in 3-inch letters below.

RECOMMENDATION 44.—*Passenger Zone*

In a passenger zone use a restriction sign (Figure 12) with the words "No Standing or Parking" at the top, and the words "Passenger Zone" in 3-inch letters below.

The limits of a zone may be indicated better by curb markings than by a sign at each end of the zone, especially if zones are close together. (See code of colors in section on Markings, p. —.)

RECOMMENDATION 45.—*Other "No Parking" Signs*

For any other conditions that require restrictions applicable to the parking of vehicles, use the restriction sign (Figure 12) with the appropriate prohibitive words at the top, and other necessary explanatory words below. Examples, "Taxi Stand," "Bus Stop." The letters shall be in red on a white background.

RECOMMENDATION 46.—*Limited Time Parking*

(a) To indicate the time limit of parking, use the restriction sign (Figure 13), with the time limit (for example, "One Hour") at the top, and the word "Parking" and other qualifications below.

(b) The letters shall be green, on a white background.

Angle parking is better indicated by pavement markings than by signs. (See section on Markings, p. —.)

RECOMMENDATION 47.—*No Pedestrian Crossing*

(a) Where there is exceptional danger to pedestrians, use the restriction sign with the words "No Crossing," in 3-inch letters, at the top, and any necessary explanatory words below in 1- or 2-inch letters, the size depending upon the number of words used.

(b) The sign shall be so placed as to apply solely to pedestrians. For example, the sign may be suspended between short posts and arranged parallel or approximately parallel to the curb line.

(c) The letters shall be blue on a white background.

This sign is not intended to prohibit pedestrians from crossing streets generally throughout a large area. Educational work against so-called jay-walking may be done better by means of posters than by permanent signs.

RECOMMENDATION 48.—*Additional Restriction Signs*

Additional restriction signs may be needed for special purposes and should conform to Recommendation 39.

Shape and Lettering of Four Typical Signs Recommended in the Foregoing Report

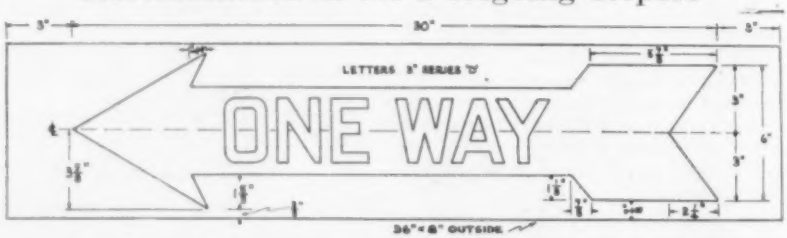


FIG. 8.—LETTERS AND BACKGROUND, SOLID BLACK; ARROW, WHITE

FIG. 1.—LETTERS AND BORDER, RED; BACKGROUND, FEDERAL YELLOW

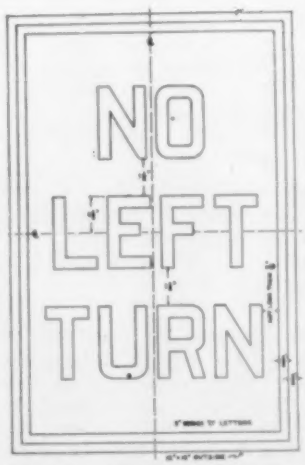


FIG. 10.—LETTERS, BLACK; BORDER, BLACK; BACKGROUND, WHITE

FIG. 7.—LETTERS AND BORDERS, SOLID BLACK; BACKGROUND, FEDERAL YELLOW

Establishing Low-Cost Housing as a Basic American Industry

Principles and Possibilities of Nation-Wide Interest Which Are Being Demonstrated in New York's Experimental Housing Operations

By JOHN TAYLOR BOYD, JR.

PROGRESS in housing must depend mainly on practical experience gained in organizing, designing, constructing and operating huge housing properties. The average real estate project can teach little, except that its small scale and its highly speculative character make it an extravagant method of industrial production — one to be avoided.

Housing is properly a matter of large-scale industrial production. It should be regarded as one of the country's basic industries. The housing industry, like other industries, develops an extremely complex and specialized technique, in which the most important factors are financial, architectural and managerial. To engage in the business requires a highly developed, experienced organization of many departments and a personnel of special training.

The success of the big experimental housing operations in New York City that have been built since the war goes far towards proving that housing can be established as a basic American industry, supplying the needs of a majority of the population. These practical demonstrations should be most thoroughly understood—each one in itself and in relation to its possible contribution to the rapidly evolving housing technique.

It may not perhaps be realized that up to only six years ago housing theory had not changed appreciably since Alfred T. White, builder of the first model tenements in Brooklyn about 50 years ago, stated clearly its principles in a pamphlet and then put these principles into practice. These New York projects appear to have made such great strides in the development of the housing art and science that now one may feel that they presage revolutionary changes in housing.

An Impressive Group of Housing Demonstrations

The housing operations referred to form an impressive group. There is, first, the Metropolitan Life Insurance Company's model tenements, now in operation five years, housing over 2,100 families in seven great groups in Queens; the 'Standard Oil" housing group at Bayonne; the several successive Rockefeller experiments in the Bronx and Manhattan; the City Housing Corporation's huge project of about 1,400 families in Queens, known as "Sunnyside"; and the two big projects under the auspices of the New York State Housing Board. There are other demonstrations, including the Lavanberg Foundation's small experiment in slum clearance on the lower East Side. All these groups, except Sunnyside, are "walk-up" garden apartments, and even Sunnyside contains several apartment houses. Of the various projects, the most economical are generally those located on land of comparatively low "suburban" values.

Some are more successful financially than others. However, several were planned chiefly as experiments in certain phases of housing, and they operate under a cost handicap. No industry, however, can be progressive unless it is willing boldly to try out new ideas in practice.

Demonstrating New Principles and Possibilities

Chiefly, the new principles or possibilities discovered in the practical lessons of these housing properties are:

1. *The necessity of large-scale or mass production.*—Generally, the larger the projects, the lower the rentals, if allowance is made for other factors such as differences in architectural standards, land values, etc. As mentioned previously, more than any other factor large-scale production is the key to the housing problem; if it is pursued with the efficiency characteristic of other basic industries, nearly all the other essential requirements automatically are brought into play. These are, chiefly, sound methods of city planning and of land utilization, economical financing, high standards of architecture, and economical management and operation of the housing properties. The social side, no less, depends chiefly on large scale, which creates a new, ideal environment.

2. *The superior efficiency of the garden apartment for low-priced housing, even on land of rather low values.*—The scientific adjustment of housing types to land values and to other costs was made the subject of four articles—"How Intensively Must We Use the Land?"—published in THE AMERICAN CITY last winter. This study was based on actual buildings, with the Metropolitan housing chosen as the apartment

Away With the Slums!

Evidence multiplies of a growing conviction among civic and social welfare leaders throughout the United States that the making available of decent, sanitary housing for every American family is a problem receiving but a fraction of the constructive thought and vigorous leadership which its outstanding importance demands. The only alternative to state, municipal or philanthropic action in the substitution of homes for slums will be the application to dwelling production of a degree of technical skill and business ability such as has gone into automobile production.

Unless American industry and finance can provide an acceptable home for the average family, our social and economic fabric will deteriorate at the core. As yet the vaunted American standard of living fails in one of its most essential factors. Civic and industrial interests must contrive to establish housing as a successful large-scale basic industry, whose object is to supply an always finer product at lower prices.

Already the remarkable success of the huge experimental housing groups in New York City has demonstrated real, practical results which hold great promise towards the solution of this vital situation of housing shortage. We publish here a summary of these achievements, written by the author of the notable series of four articles begun in this magazine a year ago, "How Intensively Must We Use the Land."

type in various comparisons made between the apartment and the less intensive types of row and individual housing. As these articles pointed out, the garden apartment can compete successfully with the intensive types of apartment houses favored by realtors. The almost negligible additional land cost of the garden apartment, as compared with the usual congested type of the speculative builder, is more than offset by its higher investment value. This superior investment value is due to the fact that the garden apartment contains no dark rooms or ill-planned homes which cause rapid depreciation and obsolescence in the usual commercial "congested" apartment types. Hence, the garden apartment carries a lower amortization rate, and should be able to attract investment capital on more favorable terms. The garden apartment, in turn, is much more efficient in most cases than the less intensive types of individual and row housing.

It may be well to refer here to the constant efforts being made in various parts of the country to lower construction costs by inventing more efficient methods of building.

The search for improved construction methods has not yet progressed far enough to show much practical result. The speculative builder is not much interested in such aims, nor has he the needed funds for research. The experimenting now being undertaken is chiefly of a minor character which has not yet led to any basic changes in construction processes. If, on the other hand, housing becomes one of our big basic industries, we may expect that it will make the most of research in this and in the other major departments of housing costs.

3. *The success of cooperative ownership in apartments.*—This is one of the greatest forward steps in housing. Until recently, experts declared it impossible; officers of the Metropolitan Life Insurance Company, after much discussion, were unwilling to tackle it in their big operation; and the City Housing Corporation had little success with it at first in practice. Nevertheless, the Rockefeller organization and the State Housing Board operations have put a quite different aspect on cooperative housing. The Rockefellers have even made it successful in several city blocks of housing for negroes in Harlem. It needs no argument to prove that the best and most economical method of getting over that big stumbling block, the equity money, is for the people to finance their own homes. Apartment houses do not preclude home ownership, as Dr. S. James Herman intimates in the last paragraph of his letter on housing, published in the September issue of THE AMERICAN CITY.

Let it be noted that the cooperative form referred to here is quite different from the so-called cooperative plan of the speculative builder, which has been popularized by realtors. The plans of the State Board of Housing and of the Rockefellers come close to the true cooperative principle, i.e., the tenant-owners take all the risk of the operation and they reap the profit in the form of fine architecture, beautiful surroundings and low costs. No speculative profit to a promoter, nor extravagant charges for secondary or other financing are taken out of the property before it is sold to the cooperators. Also, it is scarcely necessary to set forth the social and political advantages of cooperative ownership, particularly in the great cities where the growth of the apartment house has created a huge body of renters, a nomadic population whose responsibility to the community is lessened through not owning their homes.

4. *The development of a sound solution on American principles of the difficult problem of the relation of housing to government, as illustrated by the operation of the New York State Housing Law and its administrative Housing Board.*—Briefly, a housing corporation operating under the New York law enjoys a status somewhat analogous to that of a public utility corporation—a railroad, electric or gas company. It is a private enterprise operating under state legal and administrative restrictions as to organization, method of financing, type of product, character of service, operation methods, schedule of charges to the public, and investment return to holders of its securities. The power of condemnation is granted under certain conditions. The New York law is the first of its kind and is therefore necessarily experimental. Some of us believe it to be too cast-iron, but it already has been made more flexible by amendments, and in time it should become even more effective than has been already demonstrated in only two years of existence. The limiting of the dividend is criticized, but this refers only to rental apartments. In cooperatives the objection is not real, since it makes little difference what rate of equity return the cooperators pay to themselves.

It should be emphatically stated that the New York law does not bring to housing any state aid in the form of dole or subsidy or gift of land or of public credit.—The most it does in that direction is to allow the municipality, in its discretion, to limit taxation over a definite period of years. This is quite different from the complete tax exemption of a religious or educational property. There is nothing un-American in this feature, any more than there is in the tariff and similar measures. In the case of tax limitation in housing, we have a very sound reason. That is, that recent investigations of the methods of taxation and assessments in American cities have revealed a surprisingly chaotic condition, often involving cases of discrimination, or "concealed subsidies"—as Arthur C. Holden terms them in a most interesting study of this phase—and other inequalities. Until this situation is straightened out, a limitation of tax for a period of years may be justified on the grounds that it ensures that no discrimination in taxes and assessments is made against the small home owner.

At this point a brief reference to the question of the use of public credit seems desirable. The use of public credit in housing, either in direct or in indirect form, has at times found support among people interested in housing. In New York, after having been debated exhaustively for some years, the idea seems to have been abandoned, even by its advocates. They realize that the proposal has almost no chance of enactment into law, because conservative opinion regards the extension of state or municipal credit to a basic industry as contrary to sound economic principles, as revolutionary in political doctrine, and as eventually ruinous to the building industry. Furthermore, the operation of the New York Housing Law is proving that low-cost financing—the object of state credit—can be attained without it. Investment in the equity is attractive, particularly with the cooperative plan, because the investor knows that the superintendence of the State Board of Housing practically ensures a high-standard, low-cost product, which has all the advantage in competition with the average inefficient, expensive, small-scale real estate operation. Investment capital, satisfied with a lower return, is drawn upon, as contrasted with speculative funds. For the same reason, mortgage interests find the field worth while and they offer more favorable terms on first mortgages, in respect to financing charges, interest rates and amortization.

Naturally, it takes time to open new channels for investment, but, as people become convinced of the soundness of these large-scale housing projects, there is good reason to expect a constant increase of the flow of money into this market.

Such in brief, are the achievements recorded by the great housing "demonstrations" in New York. Perhaps the most significant is their success in costs. They have cut far below the prices demanded for similar goods—often inferior—in the commercial market, as will be pointed out later. This fact alone is their justification.

Other Possible Demonstrations

There are also the following phases of housing which the New York projects have not yet developed but which are now more or less on the cards:

1. *Scientific land utilization in respect to city planning and to the economical layout of streets and public utilities.*—The City Housing Corporation is about to put this side of housing to the practical test in its new town of Radburn, in New Jersey, near New York City. Its first project, housing 400 families and including business and community buildings, is described in the October issue of THE AMERICAN CITY. The other projects were obliged to accept the defective local layout of streets as the city prescribed.

2. *Slum Clearance.* — Progress in this, perhaps the hardest part of housing, will be slow, but nevertheless it is being made, both by two or three foundations and in the case of a project sponsored by the New York State Housing Board. Perhaps the point here to be made is that the long study given to slum clearance convinces us that clearance must proceed by large areas or sections corresponding as nearly as practicable to the "blighted" districts of the cities. Obviously, in such huge improvements the needs of city planning, particularly a more efficient standard of street layouts, must be considered.

3. *Condemnation.*—This is an essential factor in housing, particularly in slum clearance operations. The significance of the condemnation provisions in the New York Housing Law has probably not been fully appreciated by housing experts or by city planners. Under the law, the State Housing Board has the power of condemnation of areas and of leasing these areas to a housing corporation incorporated under the housing law. To date, this power has not been exercised, but it awaits only the fuller development of the Board's activity to put it into play.

It should be mentioned that New York State has condemnation powers of the most extensive kind, but that the administrative handling of condemnation in its municipalities is weak. St. Louis, on the other hand, has comparatively weak condemnation authority but has perfected an administration of condemnation for public improvements which is most effective on the cost side. A combination, therefore, of New York authority with St. Louis administrative practice would solve this important problem of housing. Incidentally, condemnation on a large scale will probably be found essential in city planning.

The Problem of the Lowest Economic Third of the Population

This brief summary leaves one point more to be explained—that of costs and the possibility of opening up the low-rental market. Housing, after all, is a matter of costs. American architects can produce the finest houses in the world, and American business men can promote and operate them successfully. But can such houses be sold—or rented—at a price which the average American family can afford to pay? That is really the heart of the matter. What are the results obtained in New York?

Specifically, it is being shown that houses can be offered to the public at prices ranging from one-half to two-thirds of the prices charged for commercial housing of similar quality. (Generally, commercial housing offers nothing that approaches the marvelous garden surroundings of the New York demonstrations.) This means that housing of a fine and sound architectural standard can now be provided for most of the middle economic third of the population. And, since commercial housing is already supplying the needs of the upper economic third of the population, half the battle which we are discussing seems to be won. Then, as efficiency increases as the result of experience gained in continuous construction on a large scale, we may feel confident that American ingenuity and enterprise will find means of solving to some extent the problem of even the lowest economic third. I say "to some extent," because the problem of that fraction of unfortunates who cannot support adequately a family of normal size is indeed difficult. That it is difficult is, however, no reason why every effort should not be made, using research, backed by practical experiment, to solve it. At least one hope may be held out here. Eventually the lowest income groups—if the families are not too large—may be housed in good second-hand homes, just as they now ride in good second-hand automobiles. The New York plan indicates this possibility — generally overlooked — in its amortization provision, which requires the gradual reduction of rentals, down to figures as low as $5 or $6 a room a month, including heat and hot water. This brings good housing within the reach of the middle economic third and possibly even lower.

It is entirely misleading to dismiss lightly the splendid cost achievement of these New York housing projects by saying, "They do not house a majority of the population!" That is not the point. The point is, that these projects have, as noted, cut the costs of housing substantially, and have proved the possibility of bringing a home of a high architectural standard within reach of many millions of the people who could not otherwise afford it. That is a real achievement.

What Housing Now Chiefly Needs Is Mass Production

In view of this practical record of success, is it unreasonable to believe that the knotty housing problem is actually far on the way of being solved? If so, there remains only the task of understanding the solution, and then of applying it throughout the country on a vast scale, always seeking to improve the quality of the product and at the same time to reduce its prices in accordance with the principles of mass production.

Above all things, it seems idle to expect to rely on government operation or aid, beyond the principle of cooperation worked out, even though imperfectly, in the New York Housing Law. To urge government partnership is to argue that more than half the people of this country cannot support themselves and are therefore rightly subjects of government charity. That, of course, is ridiculous.

Equally fallacious seems to be the idea of relying on the small-scale speculative builder to produce housing on the grounds that formerly he built our cities and that he produced housing for the people—at least of a sort—and that he should now be assisted somehow to function. As to the past value of the speculative builder's services there is question.

It is like the old Yankee story: "Well, Josh ain't the man he used to be!" "H'm, he never was!" But whatever be the past value of the speculative builder, his persistence in small-scale excessively speculative methods of business, which have been generally abandoned throughout American industry, was bound to cause his breakdown. This has happened since the war. Other American industries supplying basic needs, on the contrary, have in that same period met with unexpected success in the face of rising costs of labor and materials by applying the principles of mass production. So must housing follow this same road to success.

The Danger of Exaggerating Local Differences

It may be well to point out the danger of exaggerating local differences in housing. There is a tendency in housing circles to regard New York conditions as "different." Actually, they are not so different as is supposed, as can be demonstrated in many instances. The differences are chiefly ones of degree, and unfavorable factors in any one case are apt to be offset by favorable ones in the other. For instance, the wage level is generally higher in New York, and low-priced land is still available in the outlying districts. As shown by the tables containing figures of comparative costs of various housing types in relation to land value of a dollar a square foot

or less, contained in my articles on land utilization referred to, the single-family and row housing types at present labor under a heavy financial premium as compared with the garden apartment. Naturally, this condition is nation-wide. Various ways in which housing standards are emasculated in order to pay the premium were pointed out in these articles.

Such is the briefest possible summary of the progress of the housing industry as illustrated in the practical operation of the great housing projects built in New York City since the war. On the whole, it is a record of success, and one which holds real promise of bringing a high-standard home within the reach of the pocketbooks of many millions of American citizens who cannot afford to pay for the product—usually none too good — now offered them in the real estate market. The second-hand product available is apt to be sub-standard or else slums, and the supply is diminishing. Further progress, it would seem, would depend largely on making widespread the thorough detailed knowledge of these properties and housing corporations, in all their many departments and in the technical complexity of details and relationships. And as this knowledge is enriched by further progress and put to practical use, the housing industry will take its place as a basic American industry doing its share in maintaining the American standard of living of our vast industrial population.

EDITORIAL NOTE.—The four articles by Mr. Boyd, published in THE AMERICAN CITY for November and December, 1927, and January and February, 1928, have been reprinted in somewhat abridged form, in a pamphlet, "How Intensively Must We Use the Land?", obtainable without charge on application to the author at 232 Madison Avenue, New York.

Stopping Unsavory Publicity by Putting the Municipal House in Order

SHOULD publicity be given to municipal affairs when such is of a nature to destroy the pride and confidence of the people in the probity of their city? And when it is furthermore certain to be copied by the newspapers of other cities and otherwise by its sensational nature spread abroad? This is a searching question to be asked by the responsible public-spirited citizenship, especially in any city that is competing with other perhaps more soundly governed municipalities, for supremacy in industrial and other fields.

The Bureau of Governmental Research of the Kansas City, Kans., Chamber of Commerce devotes its recent Bulletin, No. 7, to this subject. "There is no denying," it says, "that unfavorable publicity is doing Kansas City immeasurable harm.

"Persons contemplating residence here are deterred. Those seeking locations for factories which would provide employment for our citizens and contribute to the prosperity of our merchants are frightened away. It is reported that one of the communities that is competing with us for the location of new industrial payrolls maintains a scrapbook filled with clippings from our own newspapers describing the mismanagement of our city's affairs. This interesting scrapbook is shown to those who are deciding whether to locate factories in that community or this!"

In the minds of many people there could be but one solution to the problem, especially when the immeasurable dollars and cents loss sooner or later affects the prosperity of the whole community. That solution is to stop the publicity.

There is a tendency in certain quarters, the Bulletin states, to criticise the newspapers for printing such reports and for featuring them so conspicuously. It has been suggested that loyalty to the community demands that they "always boost, but never knock." But with this point of view the Bureau of Governmental Research finds itself unwilling to agree, saying:

"The function of the newspapers is not to portray conditions as we wish they were, but to show conditions as they actually exist. They have no choice in the matter if they are true to the ethics of their profession. *The photographer is not to blame if the picture is ugly.* Surely the newspapers cannot be expected to represent our city's affairs as being efficiently and economically managed in the public interest if such is not the case.

"No good purpose will be served by closing our eyes to existing conditions. There is one way, and only one—to eliminate the conditions which give rise to it. Other cities which enjoy favorable publicity regarding their municipal affairs have not secured this *by concocting dishonest newspaper reports, but by putting their house in order.*

"Our newspapers cannot remedy the situation, but our citizens can."

Another New York State Water-borne Typhoid Epidemic

EARLY in October 131 cases of typhoid fever and 66 suspected cases were reported in the city of Olean, N. Y. The infection was clearly water-borne, and evidence points to inadequate chlorination of water from an auxiliary supply found to be subject to pollution, as the cause of the epidemic. Olean's principal water-supply is obtained from a creek and is filtered and chlorinated. At times when this supply is inadequate, water is pumped from wells located near the Allegheny River, south of the city, chlorine being applied by means of apparatus designed to operate automatically.

There were approximately 1,000 cases of gastro-enteritis in Olean in February. The auxiliary supply was suspected and the State Department of Health recommended to local officials that samples of water from the wells be examined regularly when in use and that tests be made daily to determine the presence of the amount of free chlorine necessary for safety.

On September 12, the existence of another outbreak of gastro-enteritis in Olean was reported. It was estimated that there had been 2,500 or more cases. Pumping from the wells was immediately discontinued. On September 20 the Health Officer reported that no new cases of gastro-enteritis were developing. Nine days later typhoid fever cases began to be reported, 15 cases being reported on that day. On investigation, it was found that the auxiliary water-supply had been used intermittently during June, July, August and early September. Water samples examined at irregular intervals had given presumptive tests for B. coli, but the results of these tests had not been noted in reports sent to the State Department of Health. Tests for excess chlorine had been made daily when the pumps were in operation, up to September 1. In September, however, when much of the pumping was done at night, the tests appear to have been made only on two occasions. The discharge of chlorine was supposed to be regulated automatically according to water pressure. Examination of daily pumpage charts revealed what appeared to be a record of a marked fluctuation in water pressure, not yet explained and apparently overlooked by the operator on two occasions, and it is suspected that this fluctuation in pressure may have been responsible for the reduction in the amount of chlorine applied.

Reports dated October 17 state that the epidemic of typhoid fever had practically ceased. On the recommendation of a committee of prominent business and professional men of Olean, the City Council appropriated $25,000 to meet the cost of emergency supplies and relief.

Conservation of Property at Fires

Fire Chiefs D. W. Brosnan, of Albany, Ga., and Thomas D. Blake, of Rockford, Ill., Offer Practical Suggestions as to Salvage Activities of Fire Departments

IT is generally estimated that only about 25 per cent of the annual fire loss is consumed by fire and the remaining 75 per cent caused by water, methods of extinguishment, and other causes, according to Fire Chief D. W. Brosnan, of Albany, Ga., one of the speakers at the annual convention, last month, of the International Association of Fire Chiefs.

With this assumption as his premise, Chief Brosnan, in a paper read before the convention, held that it is the duty of the Fire Department to perform salvage work as a means of reducing the annual fire loss. In this contention he was supported by Fire Chief Thomas D. Blake, of Rockford, Ill., who also presented a paper on the value of salvage work by the Fire Department.

Chief Blake disputed assertions that a fire department should not attempt any part-time salvage work, opposed on the grounds that it tends to disrupt team work of companies and, by requiring double work of the firemen, lays the foundation for mistakes. He declared that an efficient fire company, under capable officers, can outline its program, after a few trials, so as to cover everything expected of it and even a little more.

Ventilation of Buildings

The Georgia chief, speaking first, called attention to the fact that present-day fire officials have learned to ventilate buildings to rid them of smoke and to uncover the fire instead of throwing water indiscriminately into the smoke and often causing unnecessary damage. Very often, he advised, a small fire gives off a large amount of smoke, rendering it good policy to avoid the use of water until the building has been ventilated, the fire uncovered and the lines advanced on it. He advocated, in addition, that streams be operated from the inside of a building and directly upon the fire wherever possible. Continuing on the subject of ventilation, Chief Brosnan said:

"One large opening in a roof will in most cases ventilate a building and cause much less damage than the indiscriminate punching of holes all over the roof and practically ruining it. It is good practice to spread a tarpaulin cover on the floor to catch the débris when it is necessary to pull down ceilings or side walls. These covers can be later removed from the premises, together with their contents of débris, with a resultant reduction of loss to finished floors and rugs. It is also good practice to cover the furnishings to prevent damage from dust and dirt.

"Practically all fire departments today are using larger streams of water under higher pressure than formerly. This is especially true in the high-value districts, and of course will cause a much larger water damage unless provision is made to protect the property that is not jeopardized by fire, from being deluged with water and ruined."

Must Educate City Officials

Many large cities have installed municipally owned and operated salvage companies. The majority of departments carry their covers and other salvage equipment on hook and ladder trucks, but Chief Brosnan suggested that a few covers be carried on each mobile piece of apparatus. Commenting on the argument advanced by some chiefs that their cities will not provide them with covers, he declared:

"This fact is due to ignorance on the part of city officials and it is up to the chief to explain the need and 'sell' salvage to his board. Once he explains to these officials how the loss can be reduced, he will have no trouble in getting what he wants to work with. To these cities, I say, buy one cover, use it, and when you demonstrate the fact that you can salvage the contents of a room and probably save thousands of dollars' loss with this one cover, it will not be long before other covers will be provided. Other chiefs state that they have not sufficient manpower for salvage work. We have found that a detail of two men from each ladder truck can cover down thousands of dollars' worth of merchandise, machinery or house furnishings in a surprisingly short time. Speed is most essential in spreading the covers, but it is surprising how rapidly the covers can be spread after a little practice with them.

"Immediately on arrival at the scene of a fire, the officer in command should locate as nearly as possible the seat of the fire and the extent of it. He should determine just how he will proceed with extinguishment and this will include the amount of water that it will be necessary to use. We use 1½-inch hose with ⅝-inch tips with good results on medium-size, inside fires, and in this way we prevent a great amount of water damage. Our orders are to advance the covers at the same time the hose lines are advanced. Covers should be spread on the floor directly beneath the fire, and if the amount of water is not too great, the covers can be spread to catch and hold the water on that floor. Covers can be built up at the edges to form catch-alls that will hold the water until you can bail it out. In some of the larger cities, siphons are used to convey this water from the building, but this method would be hard of accomplishment unless you had a regular patrol to do nothing but salvage. Where the roof of a building is entirely burned off, catch-alls are valuable in preventing water damage to the building and its contents from rain.

"In covering shelves containing merchandise, we pass the covers over the top of the shelves, fasten them in place, and let them extend down completely over the face of shelving. If there are cardboard boxes of merchandise on the floor, we remove them to counters or tables if possible before covering. If you

At the Annual Convention of the International Association of Fire Chiefs

Salvage of property as one of the prime duties of the modern Fire Department was discussed at considerable length by several speakers at the annual convention of the International Association of Fire Chiefs at Philadelphia, October 17 to 20. Two of the most interesting and instructive papers read on the subject were those from which excerpts are offered in the accompanying article. Chief Brosnan spoke at the regular convention session, while Chief Blake addressed members of the Salvage Corps Officers' Association of the United States and Canada, who met in conjunction with the fire chiefs.

The convention attracted 714 fire chiefs from every section of the United States and various cities of Canada. Fire Chief John M. Evans of New Orleans was elected President of the International Association of Fire Chiefs for the coming year, succeeding Fire Chief Ross B. Davis, of Philadelphia. Other officers are Ralph J. Scott, of Los Angeles, Calif., First Vice-President; Joseph N. Sullivan, of Utica, N. Y., Second Vice-President; Jay W. Stevens, of San Francisco, Calif., Executive Secretary; James J. Mulcahey, of Yonkers, N. Y., Recording Secretary, and Peter B. Carter, of Camden, N. J., Treasurer. Birmingham, Ala., was selected as next year's convention city.

For proficiency in fire prevention, cups were awarded to Newark, N. J., for cities of more than 100,000 population; to Richmond, Calif., for cities of 20,000 to 100,000; and to Marshfield, Ore., for cities under 20,000.

The executive offices of the Association are at 225 West 34th Street, New York.

are attempting to hold the water on any given floor, care should be taken to arrange the covers over tables and shelving so as to drain into the catch-alls. In addition to the covers, our salvage equipment consists of portable electric lights, buckets, mops, brooms, squeegees, sponges, chamois, auger, roofing paper, and nails.

Removal of Water

"After the fire is subdued, the real work of conserving the loss commences. All water should be removed from floors to prevent buckling, furniture and fixtures should be wiped up. If working in a sprinklered building, all fused heads should be replaced and the sprinkler system put back into commission as promptly as possible. If the weather is clear, we open all windows, and if the electric circuits are in good condition on the floor on which we are operating, we start up the fans, for it is most essential that dampness be dried out as promptly as possible. The stock should be overhauled, if necessary, and the premises tidied up. It is most important that roofs be made watertight after a fire, and this is again the duty of the fire department; for there would be no common sense in protecting the contents of a building from damage by water used in extinguishment and then leaving the property uncovered and at the mercy of the elements. We carry four squares of roofing paper on our truck to use for a temporary roof covering, but if the sheathing is burned away and the opening of the roof larger than this area, we cover the roof with the tarpaulins. It is essential that the covers be cleaned and thoroughly dried before they are returned to service. If not, they will rapidly deteriorate, and if not cleaned they will injure delicate fabrics that you are trying to protect from damage. We prefer, and use, the all-cotton waterproofed covers. These covers are much lighter in weight, and with a small manual force they can be handled more rapidly when speed is so essential."

Chief Brosnan assured the chiefs, in conclusion, that he is confident that the public appreciates salvage work by the fire department more than any other duty which it performs.

Disagreeing somewhat with Chief Brosnan's views on the possibility of efficient salvaging work by the average fire department, Chief Blake in his paper insisted that the disadvantage in the majority of cases of attempted fire department salvage work, lies in the lack of sufficient men to adequately cover the ground necessary to provide protection. He pointed out that, except in the larger cities, no department has men or apparatus that can be devoted to salvage operations alone. In many cases, the department is so far behind in its expansion program, that it is practically impossible to obtain anything new for this purpose, he said.

Determining Number of Covers

Under such conditions, Chief Blake maintained, the officer wishing to provide a salvage service for his city must be content with a secondary plan; utilizing such apparatus and men as are available by doubling upon the company fire duty and requiring an increased effort on the part of the men. To do this with any success, the department must make use of every known aid to fire fighting to enable them to cut down the heat, water, and smoke damage for, at best, they will have but few men for the actual performance of salvage work.

Working under such a plan, the Illinois chief pointed out that it would be impossible for a department to spread two hundred covers as is commonly done by the patrols. Thus, he urged reduction of covers to the number which the particular department would be able to spread. Yet to do this, the firemen would have to ventilate and cover exposures in order to get in at the fire and confine it to its area, he believes. This in itself would tax the ingenuity of the officer in charge, especially if the number of lines available are limited, Chief Blake stated. He advocated the use of small lines, in such cases, to cut down the water damage, and said that by use of sill hooks, third men, and similar devices, line crews could be cut down to the minimum to release men for salvage duty.

As a trial experiment in Rockford, the truck companies were equipped with a half-dozen heavy covers which could be used for inside or outside covering. Speaking of this development, Chief Blake said:

"It was not long before these covers paid for themselves. One of the first fires at which they were used resulted in a $900 fire loss and a damage report of contents of only $5. This experiment proved that while the covering of the contents of a building must be secondary in consideration, the truck companies could usually get covered up before much water had started, and that by the use of small lines it was possible to reduce greatly the water to be handled and to release pipe men to assist the truckmen."

To-day, each truck of the Rockford Fire Department carries fourteen inside covers, ten roof covers, four squeegees, six brooms, four shovels, four mops, and three hammers in addition to the regular truck equipment.

Plan for Use of Small Line

The following plan for use of the small line, developed by the Rockford Fire Department after a number of experiments, was then described by Chief Blake:

"In our plan, this line is carried in the hose body instead of on a reel. Using the doughnut method of Chicago, we lay the last 100 feet of 2½-inch hose of the load U-shaped with 50 feet in each U. The small line is connected to the last U by means of a reducing coupling and is also laid into the box in U form. The loops of these U's are turned over and separated in such a manner that they can be easily grasped, the result being that when the line is laid, the whole 100 feet of small line and the 100 feet of large is pulled out of the box together. As the engines lay from the fire to the hydrant, all of this hose is dropped at the fire building, and, using this as an anchor, the engine can lay a line as it goes. Two men stay with the hose to straighten it out, while the remainder proceed with the engine. A large nozzle is also dropped off at the fire.

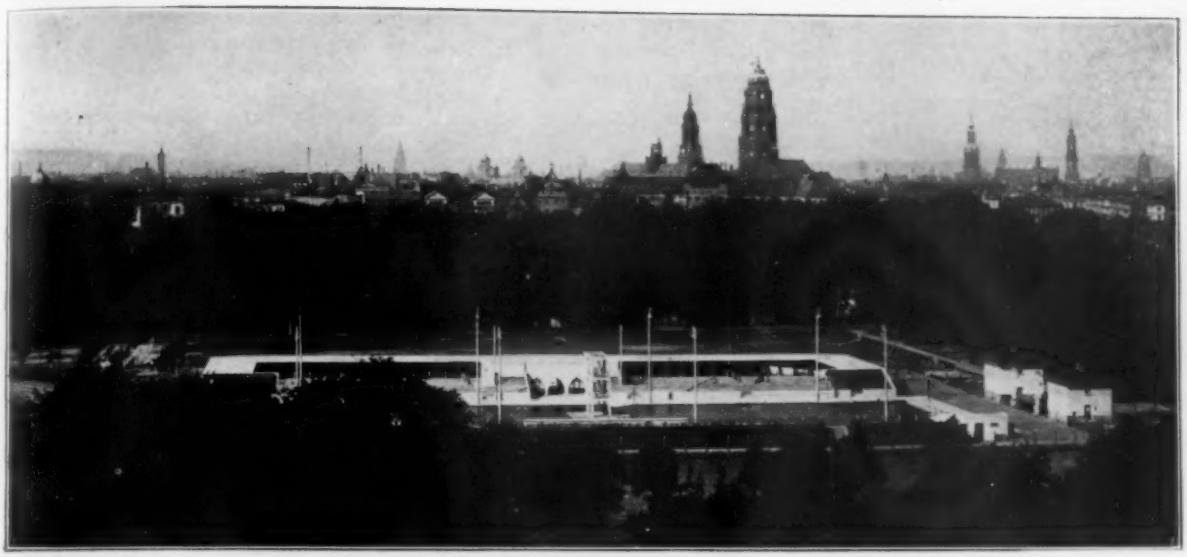
"The result obtained from this system is this: The small line equipped with its half-inch nozzle is ready for use as soon as the engine hook-up is complete with plenty of small hose to enable the company to work around the fire without dragging the heavy 2½ standard. The amount of water thrown from this line will be around 70 gallons per minute as compared with the discharge of a big line. Water damage will be reduced in proportion, while the basic advantages of the small line, namely, flexibility, mobility and speed will be obtained.

"Should a large line be needed, as it will be if the fire develops into dangerous proportions or has involved more area then was anticipated, then all that is necessary is to step back to the reducing coupling and by kinking the hose, shut off the water and substitute the large nozzle for the small line which is disconnected at that point. The large line thus put in readiness for use will have 100 feet to go on and will be in service in less than a minute.

"The operation of the salvage unit at a fire is one that is rather difficult to explain, for the action is never the same. The general idea is for the truck company coming, to dispatch one man to carry covers. This man enters the fire building with a load of covers spotting them where he thinks they will be needed.

"The remainder of the company set ladders and ventilate as it is needed, and as soon as they can be released they are sent inside to help cover up. One or two men are always left to assist the engine companies to open up and to explore the building for fire extension. As the engine companies get set they release men, when it is possible, to help cover, and by the time the water starts through, there are usually three or four men at work on the tarps.

"While the first man is waiting for help he is not idle. As soon as the covers are spotted, he starts grouping furniture or preparing stock for covering, and as soon as the first man arrives to help, they start spreading covers over these groups. In spreading covers the men work in pairs; each team starting where the covers are spotted and covering, making catch-alls or chutes as they are needed to handle the water. Any water that has escaped is taken care of by the use of mops or squeegees, and after the fire is out, everything is carefully overhauled."



Dr. Paul Wolf, Architect

THE GEORG ARNHOLD BATHS IN DRESDEN, GERMANY, SHOWING THE CITY'S SKYLINE

Development of Dresden's "Sportplatz" and Other Public Play Areas

By KARLWILHELM JUST

ENGINEER AND ARCHITECT, DRESDEN, GERMANY

DRESDEN is often called the Florence of the Elbe, and justly so, not only for its beautiful location on the Elbe River, but also for its charming and romantic surroundings. All new building planning is done with a view to continuing the traditions of former eras under the royal régime, and to creating for our times works that again represent links in the historical development of the city and that are worthy of their predecessors.

A "SPORTPLATZ" IN DRESDEN

The development of sports in Germany has been remarkable during recent years. In numerous cities, large sports grounds with stadiums, swimming pools and other features, have been established

Dr. Paul Wolf, Architect

THE ZSCHORNER GRUND BATHS IN DRESDEN

Dresden has long been known as a sports center. Before 1914, there were many sports and turners' societies to harden the bodies of the growing generations. But it is especially since the war that a large number of sports establishments have been built, under the creative guidance of the Director of the Municipal Building Department, Dr.-Ing. Paul Wolf.

As a place for Dresden's great sports competitions, the Ilgen stadium was erected in 1923, out of means from the foundation of the well-known Dresden citizen, Herman Ilgen. As an extension of this stadium, the Georg Arnhold baths have been built, this having been made possible through a foundation by the late banker Georg Arnhold. The Ilgen stadium, with a capacity at present for 25,000 spectators, is fully equipped for international contests. The Georg Arnhold baths, with a swimming pool ov r 100 yards long, surrounded by over 5,000 seats, can be used as part of the stadium as well as independently. It is provided with modern special equipment, so that it is equal to all demands.

The stadium can be reached from the inner city in a walk of but seven minutes, so that business people, office employees and laborers have the opportunity of enjoying sun, water and air in abundance, every day after their work. The location for the bath has been selected so that visitors may enjoy the spacious, formerly royal, parks, "Grand Garden" and others, to their hearts' desire. It is planned to erect here, in the near future, an extended sports forum, which, together with the neighboring German Hygiene Museum, now being built, will be a boon to the health of the masses and, for coming generations, also a testimonial to the work and accomplishments of the present day.

The development of Dresden's play and sports grounds appears from the following figures:

Year	Acres Play Fields	Sq. Ft. per Capita
1910	137.13	10.7
1914	154.43	...
1918	*140.84	...
1920	271.81	26.90
1921	†311.34	...
1922	323.70	...
1923	341.00	...
1924	375.59	...
1925	444.78	...
1927	496.67	34.44

*Decrease was due to war causes.

†In 1921, 23 communities were incorporated in the city, causing a 50 per cent increase in city territory and a 10 per cent increase in population. Some of these communities already had their own playgrounds.

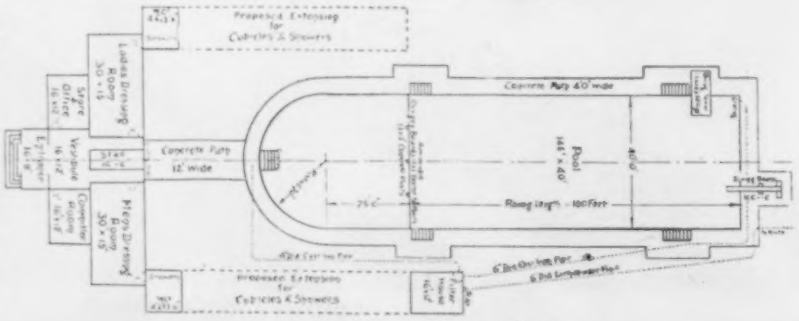
A Splendid Memorial Swimming Pool in New South Wales

As a memorial to the soldiers and sailors who lost their lives during the World War and as a service to their comrades who survived, the people of Lismore, New South Wales, have recently erected splendid, scientifically constructed swimming baths.

The project, according to a recent account in the *Australian Municipal Review*, was carried out by a committee, the funds being provided chiefly through popular subscription. The memorial building, designed by Colonel F. J. Board, M.I.A. is of brick, with cement mortar facings. In its vestibule is an alcove designed to hold the roll of honor of the dead. Beyond are committee rooms, office, and dressing-rooms for both men and women. The swimming pool, designed by G. L. Newton, A.M.I.C.E., has a total length of 145 feet, including a 100-foot racing section and a shallow semicircular end designed principally for use by children. The floor, walls, and surrounding path are of reinforced concrete. The walls are finished above water-level with white glazed tiles, and for a distance of 6 inches below water-level with blue glazed tiles, the remainder of the walls and floor being lined with white medusa cement rendering. The edge of the path and the surfacing of all steps are of terra cotta non-slip tiles which match the surfacing of the surrounding path.

The depth of the pool increases from 1 foot, 9 inches at the shallow end to 10 feet at the end facing the diving tower, the depths being marked on the side of the wall in blue figures in the tiling. In the racing section, six black tile lines, 4 inches wide, form lanes for swimmers. For important events these lines are supplemented by cork float lines on the surface. Water sanitation is ensured by filtration and chlorination, a plant having been installed for this purpose. Temporary lighting has been installed. Underwater illumination such as in use in American cities is being considered as a safety measure, but it is thought that overhead or side lighting may be permanently adopted on account of the lower expenditure involved. The whole undertaking is to be completed at a cost of approximately $45,000.

Although still uncompleted, the baths were opened during the latter part of the summer, and, in spite of adverse weather conditions, proved very popular. As much as $350 was taken in at the gate in one week, though charges are made on a nominal basis. It is proposed to use the profits realized to help needy returned soldiers and their families.



Lismore Memorial Baths. Plan of the Works.

Population Estimates as of July 1, 1928

THE Department of Commerce announces estimates, made by the Bureau of the Census, of the population on July 1, 1928, of cities which had a population of 30,000 or more in 1920. These estimates are based, in most cases, on the assumption that the annual increase of population since the census of 1920 has been the same as the average annual increase between 1910 and 1920. In those states, however, which took a state census in 1925 the estimates are based on the average annual increase between 1920 and 1925. Due allowance is made for any annexations or detachments of territory that may have taken place and of which the Bureau has been advised. This method gives an estimate which is approximately correct for the great majority of places. In a few cases, however, where there is reason to believe that, owing to exceptional conditions of growth, the figure thus obtained is far from correct, and also in those cases where the last Federal or state census showed a decrease, no estimates of the population on July 1, 1928, have been made.

Municipality	Federal Census Jan. 1, 1920	Estimated Population July 1, 1928
Alabama		
Birmingham	178,806	222,406
Mobile	60,777	69,600
Montgomery	43,464	63,100
Arkansas		
Little Rock	65,142	79,200
California		
Berkeley	57,295	71,000
Fresno	45,086	64,000
Long Beach	55,593	**
Los Angeles	576,673	**
Oakland	216,261	274,100
Pasadena	45,354	62,100
Sacramento	65,908	75,700
San Diego	74,683	119,700
San Francisco	506,676	585,300
San Jose	39,642	45,500
Stockton	40,296	51, 00
Colorado		
Colorado Springs	30,105	*
Denver	255,491	294,200
Pueblo	43,050	44,200
Connecticut		
Bridgeport	143,555	**
Hartford	138,036	172,300
Meriden	34,764	37,100
New Britain	59,316	72,800
New Haven	162,537	187,900
Stamford	35,096	43,800
Waterbury	91,715	**
Delaware		
Wilmington	110,168	128,500
District of Columbia		
Washington	437,571	552,000
Florida (State Census 1925)		
Jacksonville	135,866	140,700
Miami	††131,286	156,700
Pensacola	25,305	†
St. Petersburg	††47,629	53,300
Tampa	94,743	113,400
Georgia		
Atlanta	203,550	255,100
Augusta	52,548	56,700
Columbus	31,125	46,600
Macon	52,995	61,200
Savannah	83,252	99,900
Illinois		
Aurora	36,397	47,100
Chicago	2,701,703	3,157,400
Cicero	44,995	71,600
Danville	33,776	38,800
Decatur	43,818	57,100
East St. Louis	66,767	74,000
Elgin	††33,384	36,000
Evanston	37,234	47,600
Joliet	38,442	41,900
Moline	30,734	35,600
Oak Park (village)	39,858	57,700
Peoria	76,121	84,500
Quincy	††39,131	39,800
Rock Island	35,177	42,700
Rockford	65,651	82,800
Springfield	59,183	67,200
Indiana		
East Chicago	35,967	50,800
Evansville	85,264	98,100
Fort Wayne	86,549	105,300
Gary	55,378	89,100
Hammond	36,004	56,000
Indianapolis	315,746	382,100
Kokomo	30,067	40,400
Muncie	36,524	46,800
South Bend	70,983	86,100
Terre Haute	66,083	73,500
Iowa (State Census 1925)		
Cedar Rapids	50,561	58,200
Council Bluffs	39,795	42,300
Davenport	52,469	†
Des Moines	141,441	151,900
Dubuque	40,996	42,300
Sioux City	76,411	80,000
Waterloo	36,771	37,100
Kansas (State Census 1925)		
Kansas City	116,053	118,300
Topeka	55,411	62,800
Wichita	88,367	99,300
Kentucky		
Covington	57,121	59,000
Lexington	41,534	48,700
Louisville	††305,935	329,400
Louisiana		
New Orleans	387,219	429,400
Shreveport	††67,641	81,300
Maine		
Lewiston	31,791	36,600
Portland	69,272	78,600
Maryland		
Baltimore	733,826	830,400
Massachusetts (State Census 1925)		
Boston	779,620	799,200
Brockton	65,343	†
Brookline (town)	42,681	45,700
Cambridge	119,669	125,800
Chelsea	47,247	49,800
Chicopee	41,882	45,400
Everett	42,072	43,300
Fall River	128,993	134,300
Fitchburg	43,609	45,200
Haverhill	49,232	†
Holyoke	60,335	60,400
Lawrence	93,527	†
Lowell	110,296	†
Lynn	103,081	105,500
Malden	51,789	53,400
Medford	47,627	52,900
New Bedford	119,539	†
Newton	53,003	57,300
Pittsfield	46,877	50,000
Quincy	60,055	67,600
Revere	33,261	36,000
Salem	42,831	43,000
Somerville	99,032	102,700
Springfield	142,065	149,800
Taunton	39,255	40,600
Waltham	34,746	37,100
Worcester	190,757	197,600
Michigan		
Battle Creek	36,164	47,200
Bay City	47,554	49,600
Detroit	††1,242,044	1,378,900
Flint	91,599	148,800
Grand Rapids	137,634	164,200
Hamtramck	48,615	99,800
Highland Park	46,499	86,400
Jackson	48,374	63,700
Kalamazoo	48,487	56,400
Lansing	57,327	79,600
Muskegon	36,570	46,600
Pontiac	††54,203	61,500
Saginaw	61,903	75,600
Minnesota		
Duluth	98,917	116,800
Minneapolis	380,582	455,900
St. Paul	234,698	**
Missouri		
Kansas City	324,410	391,000
St. Joseph	77,939	78,500
St. Louis	772,897	848,100
Springfield	39,631	51,700
Montana		
Butte	41,611	43,600
Nebraska		
Lincoln	54,948	71,100
Omaha	191,601	222,800
New Hampshire		
Manchester	78,384	85,700
New Jersey		
Atlantic City	50,707	54,700
Bayonne	76,754	95,300
Camden	116,309	135,400
East Orange	50,710	65,000
Elizabeth	95,783	**
Hoboken	68,166	*
Jersey City	298,103	324,700
New Brunswick	32,779	40,800
Newark	414,524	473,600
Orange	33,268	36,500
Passaic	63,841	71,800
Paterson	135,875	144,900
Perth Amboy	41,707	50,100
Trenton	119,289	139,000
Union City	60,721	64,400
New York (State Census 1925)		
Albany	117,820	120,400
Amsterdam	35,260	36,200
Auburn	35,677	†
Binghamton	71,915	74,800
Buffalo	538,016	555,800
Elmira	48,359	50,000
Jamestown	43,414	46,000
Mount Vernon	50,382	54,700
New Rochelle	44,222	48,800
New York	5,873,356	6,017,500
Bronx Borough	872,168	951,900
Brooklyn Borough	2,203,235	2,308,500
Manhattan Borough	1,945,029	1,752,000
Queens Borough	714,647	854,400
Richmond Borough	138,277	150,700
Newburgh	30,419	30,400
Niagara Falls	57,033	68,300
Poughkeepsie	35,670	39,100
Rochester	316,786	328,200
Schenectady	92,786	93,300
Syracuse	182,003	199,300
Troy	72,223	72,300
Utica	101,604	104,200
Watertown	32,836	33,700
Yonkers	113,647	121,300
North Carolina		
Charlotte	††80,513	82,100
Durham	††42,258	47,600
Greensboro	††43,525	51,900
Wilmington	33,372	39,100
Winston-Salem	48,395	80,000
Ohio		
Akron	208,435	**
Canton	87,091	116,800
Cincinnati	401,247	413,700
Cleveland	796,841	1,010,300
Columbus	238,762	299,000
Dayton	152,559	184,500
Hamilton	39,675	44,200
Lakewood	41,732	65,000
Lima	41,326	49,700
Lorain	37,295	44,900
Portsmouth	35,193	41,200
Springfield	60,840	73,000
Toledo	243,164	313,200
Youngstown	132,358	174,200
Oklahoma		
Muskogee	30,277	33,200
Oklahoma City	91,295	**
Tulsa	72,075	170,500
Oregon		
Portland	258,288	**
Pennsylvania		
Allentown	76,051	99,400
Altoona	60,331	69,100
Bethlehem	54,149	67,000
Chester	58,030	74,200
Easton	33,813	38,400
Erie	93,372	**
Harrisburg	75,917	86,900
Hazleton	32,277	38,300
Johnstown	67,327	73,700
Lancaster	53,150	58,300
McKeesport	46,781	50,400
New Castle	44,938	52,500
Norristown(borough)	32,319	36,200
Philadelphia	1,823,779	2,064,200
Pittsburgh	594,277	673,800
Reading	107,784	115,400
Scranton	137,783	144,700
Wilkes-Barre	73,833	91,900
Williamsport	36,198	44,000
York	47,512	49,900
Rhode Island (State Census 1925)		
Cranston	34,471	37,500
Newport	27,757	†
Pawtucket	69,760	73,100
Providence	267,918	286,300
Woonsocket	49,681	53,400
South Carolina		
Charleston	67,957	75,900
Columbia	37,524	50,600
Tennessee		
Chattanooga	57,895	73,500
Knoxville	77,818	105,400
Memphis	162,351	190,200
Nashville	118,342	139,600
Texas		
Amarillo	††38,311	39,200
Austin	34,876	††45,133
Beaumont	40,422	56,300
Dallas	158,976	217,800
El Paso	77,560	117,800
Fort Worth	111,536	170,600
Galveston	44,255	50,600
Houston	138,276	**
San Antonio	161,379	218,100
Waco	38,500	46,600
Wichita Falls	40,079	**
Utah		
Ogden	32,804	39,100
Salt Lake City	118,110	138,000
Virginia		
Lynchburg	††38,493	38,600
Newport News	35,596	53,300
Norfolk	115,777	184,200
Petersburg	31,012	37,800
Portsmouth	54,387	61,600
Richmond	171,667	194,400
Roanoke	50,842	64,600
Washington		
Seattle	315,685	383,200
Spokane	104,437	109,100
Tacoma	96,965	110,500
West Virginia		
Charleston	39,608	55,200
Huntington	50,177	68,600
Wheeling	56,208	*
Wisconsin		
Green Bay	31,017	36,100
Kenosha	40,472	56,500
La Crosse	30,421	30,400
Madison	38,378	50,500
Milwaukee	457,147	544,200
Oshkosh	33,162	33,200
Racine	58,593	74,400
Sheboygan	30,955	35,100
Superior	39,671	*

* No estimate made; population decreased 1910 to 1920.

** No estimate made; see explanation at head of table.

† No estimate made; population decreased 1920 to 1925.

†† Special census since 1920, taken under the supervision of the Bureau of the Census.

FORWARD STEPS

Reported by

Municipal Officials, Chamber of Commerce Executives, and Others

Flint Favors Council-Manager Form of Government

FLINT, MICH.—Voters of this city expressed themselves definitely in favor of revising the city charter and of adopting the council-manager form of municipal government at an election September 4.

The vote to revise the charter was 12,326 Yes and 6,395 No, while the advisory vote for the council-manager form was even more emphatic, with 13,250 favoring the change and only 6,396 opposing it. While the campaign was conducted under the name of the Commission-Manager Charter Club, the Flint Chamber of Commerce took the leadership in planning and directing the movement.

An intensive educational campaign was conducted during the two weeks prior to the election. In addition to general publicity matter in the press, paid advertisements were utilized and also such publicity media as windshield stickers, window display cards, posters, etc. Special speakers gave talks on the advantages of the council-manager plan at 37 neighborhood meetings held simultaneously throughout the city ten days before the election. Precinct organizers were appointed who endeavored to form in each of the 57 precincts, a live, energetic organization for the purpose of making a house-to-house canvass. A public mass meeting, with Walter J. Millard, Field Secretary of the National Municipal League, as the main speaker, also attracted considerable attention.

To stimulate attendance at the various campaign meetings, more than 12,000 letters were mailed from the Chamber of Commerce on the stationery of the Commission-Manager Charter Club. A victory was anticipated, but not by the decisive vote finally recorded.

ORREN I. BANDEEN,
Manager, Chamber of Commerce.

Two Unexpected Examples of Cooperative Regional Planning

HARRISBURG, PA.—Pennsylvania communities a few weeks ago offered two outstanding examples of what can be accomplished in the regional planning field through effective cooperation of the sections concerned.

Perplexing problems of sanitary sewage disposal and the connection of the two streets by extension to form a continuous thoroughfare, served to bring together the Planning Commissions of the boroughs of Camp Hill and New Cumberland in Cumberland County. In this particular instance, it was felt that a joint meeting would devise solutions which these boroughs were unable to reach independently. The conference proved so satisfactory that state officials greeted the move with approbation.

A somewhat similar and equally pleasing incident occurred recently at Lancaster. The City Planning Commission of that municipality submitted plans to the City Council for a 100-foot boulevard and adequate parking space near the new station built for Lancaster by the Pennsylvania Railroad. Since the depot is located just outside the city limits and in an adjacent township, it was found necessary to obtain the approval of the Township Supervisors before proceeding with the work. Their assent was given immediately, and once again, through intelligent cooperation, both communities interested benefited.

Regional planning programs cannot be realized fully unless the communities involved are as willing and anxious as these in Pennsylvania, to discuss matters and by so doing to profit equally. These two cases, it is to be hoped, have set important precedents which will be followed in similar instances in other states.

FRANCIS J. MULVIHILL,
Chief, Division of City Planning and Municipal Engineering, Bureau of Municipal Affairs, Pennsylvania Department of Internal Affairs.

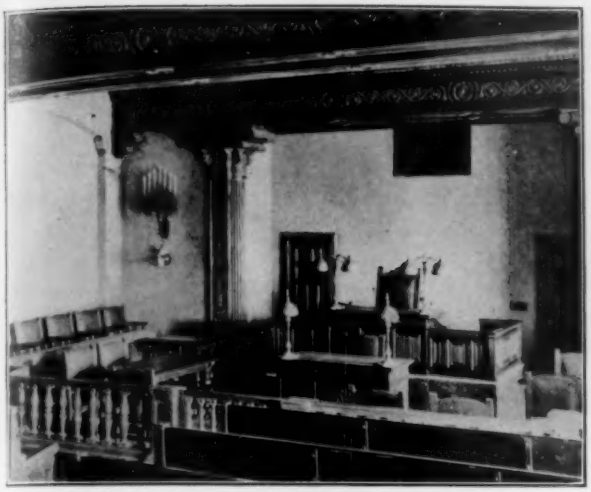
A "Civic Office Building" Instead of a "City Hall"

LONDON, ONT.—The new four-story office building on Dundas Street, the main thoroughfare of London, Ont., is a handsome cut-stone structure that required an outlay of over $500,000. It hasn't a tower, or a clock, a pillar or a gargoyle. In fact, it is not a "city hall" in the accepted sense, at all, but is a "civic office building" designed and built for the purpose of housing the municipality's executives, and entirely with an eye to efficiency. Without any lofty lobby, or any pillared halls, or any large auditorium, it is intended to provide ample accommodation for public and private offices for the City Clerk, Assessment Commissioner, Treasurer, City Engineer, Mayor, Auditor, Public Utilities Manager, and Board of Education.

The people voted the money for a "civic office building," not for a city hall," and knew what they were to get for their money. City officials are delighted with the scheme to have their offices compact and efficient in every respect. But there exists, too, a feeling that this building is temporary, and that it is only a matter of a short time until the city will outgrow such a modest structure and a new, larger, and more architecturally beautifully civic building will be erected. At any rate, if it should be desired to sell the civic office building and build elsewhere and in some other style, the market will likely be found more receptive to a modern block of offices than to a city hall building designed half for use and half for show, as most municipal buildings are.

Fourteen years ago the city of London sold its antiquated and outgrown City Hall on Richmond Street to the Royal Bank, which remodeled it into an excellent office building. Then followed a long period when the city offices were housed temporarily in an unsuitable block on the

NEW CIVIC OFFICE BUILDING, LONDON, ONT.
Space in the lower left hand-corner of the building is used as a hydro-electric shop, where electric appliances are sold by the city's Public Utilities Commission



TYPICAL ELABORATE FINISH IN ONE OF THE EIGHT COURT-ROOMS OF THE DADE COUNTY COURT-HOUSE, MIAMI, FLA.
The ceilings, of heavy beamed and curved design, and the rest of the woodwork, are of hand-carved cypress

RECREATION ROOM IN THE TOWER OF THE COURT-HOUSE, THE JAIL SECTION BEING IN THE INTERIOR
The jail section is surrounded by a passageway which gives a view over the city and the surrounding country

site of the present new building. City officials and public were inconvenienced. The people finally voted in favor of "Federal Square" plan, by which a City Hall was to be built alongside a new postoffice, a new fire hall, and a new police station, and the whole surrounded by a certain amount of park space.

Before this could be put into effect, came the announcement that the new Federal postoffice building would be incorporated with a proposed Canadian National Railways station building. The property acquired for the "Federal Square" was subsequently sold and a new eight-story hotel now stands there. Office buildings are now projected or under construction on several nearby sites, and the skyline has become anything but a "Federal Square" skyline. Under these circumstances the City Council believed it would not be wise to build anything but an office building with the capital available, since the business center of the city was expanding so rapidly. Hence the scheme to put up a suitable city office structure, new but temporary.

The ground floor of the civic office building has a central entrance and a central public floor. People who have tax bills to settle, water-rates or electric-light bills to pay, or licenses to buy, are able to discharge their business as if they were in a bank. The second floor provides private offices for the Mayor, the City Clerk, and other officials. They are accessible, yet away from office routine. Higher up are council chambers, committee rooms, Board of Education offices, draughting and engineering offices.

Every modern office aid has been installed for the business departments.

This includes a central letter filing system, with carriers installed to serve the various offices.

City Clerk Samuel Baker believes that the organization of the London civic offices will be such as to serve as a model for other cities of the Dominion. He is an advocate of the city manager system of civic government, and thinks the decision to carry on business in a businesslike building is simply another evidence that people want things handled in the modern way. As a matter of fact, the people of London voted long ago in favor of the principle of the manager plan. It has been discussed in Council this year and may be inaugurated soon.

Mayor George A. Wenige, who has been elected to the chief magistrate's office four times, thinks, however, that the civic office building does not indicate a trend. He believes it is only a temporary expedient, dictated by the swift-moving changes in the city's skyline. When the population rolls along to the hundred thousand mark, he thinks people will speak out for an ornamental city hall, one which they will be able to point out with pride to visitors as an emblem of the city's importance.

T. R. ELLIOTT.

A Four-Million-Dollar 28-Story "Tower of Justice"

MIAMI, FLA.—The "Tower of Justice" has been aptly suggested as the name for the new 28-story court-house and municipal building of Dade County and Miami. This building rises 335 feet from the ground and cost $4,124,911. Its dedication September 6 marked another milestone in the progress and growth of the Miami region. The tower, brilliantly lighted at night by huge floodlights and with a beacon at the tip of the ornamental pyramid top, visible 50 miles at sea, is considered emblematic of the vision and ability to carry on of Dade County's citizens. It is the tallest structure south of Baltimore, and is believed to be the tallest municipal building in the United States.

Arrangements between the county and the city provided that the city should lease for ten years the space it needed for a sum equal to one-quarter of 5 per cent of the carrying charges, and one-quarter of the maintenance costs, averaging about $60,000 annually. The city occupies about one-quarter of the space.

In view of the different requirements of city and county, the architects, A. Ten Eyck Brown, of Miami and Atlanta, and August Geiger, of Miami, worked out with city officials details of the floor-plan layouts, these being carried out to the satisfaction of the City Commission. Offices which have frequent dealings with the public, both city and county—tax and finance departments, assessors, sheriff, and city administrative offices—are on the first three floors, while other officials, courts and jails are accommodated on upper stories. One floor is used by the United States income tax division.

Following out the custom of modern skyscraper design, the structure is of the setback type, having a three-story base approximately 168 feet square, with a secondary base of three stories about 138 feet square. From the seventh to the twentieth floors, the tower is a square shaft. It changes to octagonal shape at the twentieth floor, with a further decrease in area at the twenty-fourth floor. A three-story pyramid surmounts the tower.*

The building is of steel frame construction, the exterior being faced at the base of the building with Stone Mountain granite and the other floors with terra cotta. About 2,600 tons of structural steel is contained in the building, being fireproofed with reinforced concrete, and the floor slabs are of clay tile and cement grout. About 220,000 square feet of clay tile was used in their construction.

Surrounding the building and five feet above the sidewalk level is a broad slate-paved terrace. The terrace and main floor, which is six feet above the terrace level, are reached by two flights of granite steps on the north and south sides. At the corners and along the sides, at ground level, are planted royal palm trees of the same height. The finish of the pyramid is of waterproof cement stucco, having a texture similar to that of terra cotta.

The jails, with their administrative offices, occupy the floors from the fourteenth to twenty-fifth, inclusive, and are served from the basement by two private elevators. The cellar and other rooms used by the prisoners are exceptionally sanitary and pleasant, and, in addition, are so scientifically constructed as to be tool-proof

* See front cover of this issue of THE AMERICAN CITY.

and so equipped that jail delveries will be impossible without inside aid. All work in the jails was of special design, the practice of placing prisoners "up in the air" being most unusual.

There are ample quarters for 576 prisoners, with officers' quarters, jail attendants' quarters, kitchens and mess halls. Each block of cells has a day room furnished with benches and a long table, shower-bath, and other fixtures. On the twenty-fourth floor, all the cells occupy the interior space and are surrounded by a sun room or promenade which goes around the entire building and is enclosed with tool-proof grating. Magnificent views of the area may be had from the promenade and from the jail windows.

At night the prisoners are locked in cells containing from four to ten bunks. Each is electrically lighted, has forced draft ventilation from a refrigerating plant, and is protected by non-shatterable glass with a speaking panel so that visitors do not come in direct contact with prisoners and cannot slip articles to them.

All cell blocks are equipped with an operating device of the most modern and ingenious type. Doors or cells may be opened or closed individually or all at once. By this arrangement, all doors are locked, opened or closed, and cannot be moved except by throwing the lever, which is operated like a combination safe lock. There is only one key to each floor, the lever boxes being constructed with combination locks which cover the keyhole and are disclosed only by throwing the lever. The floors of the prison sections are tool-proof adamant, varying from five to six inches in thickness. The exterior walls are tool-proof, so that access from outside is impossible except with an acetylene burner. There are kitchens and mess rooms and a hospital ward, and separate quarters are provided for different sexes, white and colored prisoners and juvenile prisoners, who are kept away from the older ones.

Construction of the building was awarded to thirteen main or general contractors, as follows: Stewart Iron Works, Covington, Ky., jail work; L. W. Hancock, Louisville, foundations, concrete work, fireproofing, roofs, terra cotta; Nashville Bridge Co., Nashville, structural steel; Stone Mountain Granite Corporation, Stone Mountain, Ga.; Crittall Casement Window Co., Detroit, steel windows; W. C. Burns, Maysville, Ga., plumbing; Whitmore Electric Co., Charlestown, W. Va., electrical work; Otis Elevator Co., New York, elevators; Fleisher Engineering and Construction Co., Chicago, interior finish; Tampa Hardware Co., Tampa, kitchen equipment; American Electric Co., Miami, electrical fixtures; Granada Furniture Shops, Coral Gables, furniture for court-rooms and special rooms; Roman Furniture Co., Miami, benches for court-rooms and special rooms.

W. L. ROBINSON.

Fishing in a City Park

FORT WAYNE, IND.—"Let's go fishing!" is the glad cry of children in this city, expressing no idle wish for the unattainable, but a joyous invitation to real sport.

The city fathers, being possessed of a fish hatchery in one park and lagoons in several others, decided to find out what these could effect for the pleasure of the younger generation. They planted bass fry in the pool at Reservoir Park, protecting the young fish until they were grown to a size which, under the game laws, could be taken with hook and line.

CHILDREN MAY FISH IN THE LAGOON IN RESERVOIR PARK, FORT WAYNE, IND.

A city ordinance was then passed to allow children to fish in this lagoon—and the fun was on. Parents may come to put on the bait and take off the fish, but adults are prohibited from doing any fishing, and will be prosecuted if they are found attempting it. Children unaccompanied are quite safe, for the part of the lagoon used for fishing is presided over by a park policeman, who keeps constant watch there, to supervise the sport and prevent accidents.

The plan has proved successful, some small sportsmen having proudly carried home fish weighing nearly a pound, so it is the intention of the authorities to extend the privilege to include other parks, as soon as the pools are stocked.

RITA PIATT O'BRIEN.

Optical Illusion Aids Motorists

SAVANNAH, GA.—The cautious driver is prone to swerve too far to his right when approaching a car with blinding lights, a characteristic fault which resulted in a number of cars colliding with the two bents of a railroad trestle closely bordering the road. These bents were first painted the customary black and white checkerboard design, which rendered them visible even against an oncoming glare, but the effect of the alternate squares was to reduce the apparent area of the timber and thus to exaggerate the actual roadway clearance. Instead of widening the span over the highway, the officials concerned took advantage of a well-known principle in optics. Diverging lines were painted on the beams so that the bents actually appear to bulge toward the road, as shown in the illustration. Observation of drivers after the change in painting showed that they drove on an average of a foot nearer the center line of the road than formerly—still leaving plenty of clearance for meeting cars, and at the same time avoiding the timbers. So convincing is the effect of the divergent diagonal stripes that at least one automobile party halted long enough to take a string and plumb the edge of the timber, before being convinced that the inner edge was indeed straight.

ALL SCIENCES ARE LENDING THEIR AIDS TO THE CAUSE OF HIGHWAY ACCIDENT PREVENTION

A familiar principle of optics aids the motorists in Savannah, Ga.

ELTON STERRETT.

Washington Registers Great Gain in Public Tree-Planting

WASHINGTON, D. C.—That the city officials of our National Capital fully appreciate the part that its trees play in making Washington the beautiful city that it is, is evidenced in the annual report of the Superintendent of Trees and Parking, Clifford L. Lanham.

This report, just submitted to the District Commissioners, shows a net gain of 1,216 trees for the fiscal year ending June 30. A total of 2,836 young trees were set out in the city, 2,381 of these being planted in hitherto unplanted suburban sections.

Altogether, 1,620 trees were removed during the year. Three hundred and forty-five were cut down to make way for street and alley improvements, 44 were destroyed by storms, 20 by automobiles, 124 were removed because they were decayed and dangerous, and 7 because they interfered with building operations.

It was necessary to purchase 200 Norway maples to complete the spring planting, Superintendent Lanham reported, as the present city nurseries failed to produce a sufficient number of trees to meet the needs. These nurseries in another five years will meet the city's demand for young trees, however, he said.

PAUL H. HAYWARD.

THE MONTH IN PUBLIC HEALTH

Conducted by JAMES A. TOBEY, DR. P. H.

Noise and Health

NOISE is one of the worst of the many annoyances of modern civilization. As a disturbance to comfort and repose, noise is a general nuisance. As the causation of physiological harm in many susceptible persons, unnecessary noise may be a distinct health hazard and as such should be controlled by municipal health authorities, just as are other public health nuisances.

The actual effect of noise on vitality and health is of course somewhat difficult to measure. When unreasonable noise interferes with necessary rest and sleep, it is, as pointed out in the *Weekly Bulletin* of the New York City Health Department for July 28, 1928, a distinct menace to health. In that city, when flagrant nuisances are created by unnecessary noise, especially between 11 P. M. and 6 A. M., the Department of Health endeavors to take prompt steps to abate the nuisance.

The welfare of babies is particularly dependent upon sleep, and invalids and convalescent persons require rest and quiet. There are many individuals who suffer from fatigue, nerve exhaustion, and other afflictions of a neurotic character, who are adversely affected by noise. Difficulty in obtaining sleep because of lack of quiet in the environment has in some instances led to the taking of narcotic drugs and thus has contributed to that social problem.

In England there has recently been much agitation against unnecessary noise, particularly at night. The matter was discussed at the July meeting of the British Medical Association, according to a report in the *Journal* of the American Medical Association for August 25, 1928. At that time there was quoted an estimate that noise impaired working efficiency in America to the extent of $5,000,000 a week.

This statement and one attributed to an Oxford University professor in a two-column article in the New York *Times* for September 23, 1928, that civilization has never before been confronted by such a malignant plague as noise, are both unquestionably much exaggerated. This alleged high cost of noise is properly questioned by a writer in the *Mental Hygiene Bulletin* for September, 1928, who also suggests that while noise is a nuisance of urban environment, it is really better for our mental health if we get used to noises of the workaday week and "adjust" ourselves to them instead of letting them bother us.

The clash and clatter, din and racket of unnecessary noise, is, nevertheless, a significant matter, and health authorities will make no mistake and may, in fact, enhance their popularity with a long-suffering and harassed public, by attempting to diminish and prevent improper clamors.

The Status of Serums and Vaccines

SINCE the end of the eighteenth century, when Jenner introduced vaccination against smallpox, and the middle of the nineteenth, when Pasteur did his notable work on the control and prevention of the maladies of man and animals, serums and vaccines have been increasing in number and importance. Many such agents for the prevention or treatment of disease have become well established, while others are still in the trial stage. The status of most of these products is outlined by Benjamin White, Ph.D., in a valuable article in the *New England Journal of Medicine* for September 13, 1928.

In addition to the smallpox vaccine, which has been demonstrated by years of experience to be the only preventive of that distressing disease, there are a number of other biological preparations which have been proved to be efficacious. The vaccine for rabies (a disease popularly known as "hydrophobia") and the serum for anthrax were among the first of the preventive agencies developed by Pasteur. A vaccine for typhoid fever and also the paratyphoid fevers has been in successful use for many years and has shown its value by helping to reduce the typhoid incidence to a negligible amount in the army. Similarly, there is a well-established antitoxin for tetanus, or lockjaw.

More recently, diphtheria and scarlet fever have joined the list of diseases against which anti-toxin and serum, respectively, are available. The toxin-antitoxin for diphtheria will confer in most cases a positive immunity to this disease and, like smallpox vaccine, should be given as a routine to all children. The general use of the scarlet fever anti-toxin or serum is, however, not yet considered advisable, according to Dr. White, and this view is concurred in by other investigators.

Among other serums having considerable use are those against pneumonia, common colds, and whooping-cough. Views regarding the serum treatment of pneumonia are somewhat contradictory. According to Dr. White, the serum when properly given in certain instances often exerts a favorable influence. In the case of common colds, little is to be expected of the immunizing action of serums, in the opinion of Dr. White. With respect to whooping-cough, no one really knows whether the vaccine does any good or not, though it does no harm.

The list of diseases for which no serums or vaccines are available is of course much longer. There is, for instance, no such remedy or preventive for tuberculosis and none for cancer. A serum from the blood of convalescents from measles has recently been found to be valuable in the treatment of this disease, and studies on a similar remedy for infantile paralysis are now in progress. Hope for the future seems bright, and we may yet realize the prophesy of Pasteur that all contagious diseases may be conquered by man.

The Control of Whooping-Cough

THE whooping-cough season has arrived to vex the health official, for this disease resembles measles in the difficulty with which it is controlled. According to Carl E. Buck, Dr. P.H., Epidemiologist of the Detroit Health Department, whose article on this subject is reproduced in the *Weekly Bulletin* of the California Department of Public Health for September 8, 1928, the solution of the problem of preventing the spread of whooping-cough rests primarily on the shoulders of parents.

Whooping-cough, like measles, is highly contagious in the early stages before it has been recognized or diagnosed. If, therefore, advises Dr. Buck, we keep our children away from other children, particularly young children, whenever they have a cough or a cold, and will further call in a physician in order to get a definite diagnosis whenever the cough or cold persists, such action will break the contact between the sick and the well and will definitely prevent the spread of the disease. The next important step is to notify the health department, so that prompt control measures may be put into effect.

The period of isolation used for whooping-cough varies in different communities, some using three and others as much as six weeks. The shorter time is usually sufficient. A committee of the American Public Health Association recommends that patients be isolated only for the period of presumed infectivity, and that is seldom over four weeks from the beginning of the disease.

Banish the Rat

FOR every person in the United States there is also one rat, for the rat population of this country is estimated by the United States Public Health Service to be 120,000,000. The depredations of these useless rodents cost the country approximately $200,000,000 for food consumed and as much more for losses due to the destructiveness of these animals. They also constitute a definite health hazard because of their ability to carry bubonic plague. The ousting of the rat is consequently a most desirable thing.

The most effective rat suppressive measure is to separate the rat from his customary food supply, or vice versa. This involves the elimination of garbage dumps, the destruction of all refuse and offal, the covering of all garbage cans, and the keeping of bulk foods in the home or elsewhere in rat-proof containers.

The next most effective measure, which is supplementary to starvation, is to eliminate the breeding-places and living-quar-

Culture *and* Refinement *Demand--*

CULTURE and refinement demand that touch of atmosphere . . . that inherent cleanliness and air of distinction so necessary for character in public buildings.

For floors, walls and stairways . . . for counters or lavatories ... Marble offers an invaluable aid in achieving those standards of practical beauty and individuality that one associates with the better type of structures.

In this colorful interior, the marbles used in floor, walls and columns create a striking beauty.

And, too, the use of marble involves but modest expenditure, even for so rich and colorful a material. The initial cost of marble is very reasonable, while its durability is so great that replacements and upkeep costs are practically eliminated. The ease with which marble is maintained clean is, too, a factor in its definite economy.

There is No Substitute for Marble

Consult your nearest marble dealer for definite prices. Send, too, for the Portfolio shown on the left, containing illustrations of typical marble installations in many types of buildings, including residential, civic and commercial. Address Department 11-L.

NATIONAL ASSOCIATION *of* MARBLE DEALERS
ROCKEFELLER BUILDING - CLEVELAND - OHIO

ters of the rat and, as the Public Health Service says, "keep the rat on the run." This Government bureau has recently issued a useful pamphlet, Public Health Bulletin No. 180, on getting rid of rats, which may be obtained by writing to the Surgeon General, U. S. Public Health Service, Washington, D. C.

University Degrees in Public Health

APPROXIMATELY 100 degrees in public health were granted in 1927 by American and Canadian universities, according to the report of the Committee on Training and Personnel of the American Public Health Association, which appears in the *American Journal of Public Health* for September, 1928. Of these degrees, the largest number, 27, was the certificate in public health (C.P.H.). There were 12 doctorates in public health (Dr. P. H.), 11 doctorates of science in hygiene (Sc.D.), and 8 doctorates in philosophy in public health or hygiene. The remaining 40 degrees were bachelors' or masters' degrees, though 6 diplomas in public health (D.P.H.) were granted at Canadian universities.

Public health courses leading to degree are now offered by twelve universities in the United States and five in Canada. In 1927, 12 of these institutions had a total enrollment of 199 students, with 98 graduates, while 5 had no students.

The American universities, arranged in the order of the number of students taking public health courses, are as follows:

Johns Hopkins School of Hygiene, Baltimore, Md.
Massachusetts Institute of Technology, Cambridge, Mass.
Harvard School of Public Health, Boston, Mass.
Yale School of Medicine, New Haven, Conn.
University of California, Berkeley, Calif.
University of Michigan, Ann Arbor, Mich.
University of Minnesota, St. Paul, Minn.
Ohio State University, Columbus, Ohio.
University of Georgia, Augusta, Ga.
Columbia University, New York.
University of Pennsylvania, Philadelphia, Pa.
Detroit College of Medicine and Surgery, Detroit, Mich.

The Canadian universities are:

University of Toronto
University of Montreal
Queens University
McGill University
University of Western Ontario

Of these, the University of Toronto, which, like Johns Hopkins and Harvard, receives help from the Rockefeller Foundation, had 9 students in public health in 1927, while the others had none.

The American Public Health Association Meets

THE Fifty-seventh Annual Meeting of the American Public Health Association, held in Chicago October 15 to 19, 1928, was the largest in the history of the Association. The registration of more than 2,500 exceeded by approximately 1,000 the highest previous attendance, though this increase was due in part to the fact that a number of other societies, including the American Child Health Association, the American Social Hygiene Association, the Illinois Conference of Health Officers and Public Health Nurses, and other groups, met at the same time and in conjunction with the American Public Health Association.

Among the resolutions adopted at the meeting were those urging Congress to pass over the President's veto the Parker bill for Federal health coordination; urging Congress to continue Federal aid for health work in counties in the flooded areas; urging Congress to recognize the heroes of the famous yellow fever experiment; urging Congress to grant second-class mailing privileges to county and municipal health bulletins; and urging the more efficient reporting of tuberculosis.

George W. Fuller, consulting engineer, of New York City, was elected President of the Association, succeeding Dr. H. N. Bundesen of Chicago. Other new officers are: Dr. A. J. Chesley, State Health Officer of Minnesota, First Vice-President; Dr. Norman MacL. Harris, of Ottawa, Ont., Second Vice-President; Dr. Louis E. Schmidt, of Chicago, Third Vice-President; and Prof. E. O. Jordan, of Chicago, Treasurer. Dr. George F. Buchan, President of the Society of Medical Officers of Health of England, who was present, was elected an honorary fellow of the Association. Herbert Hoover was re-elected President of the American Child Health Association.

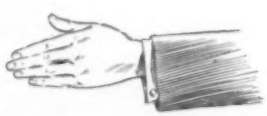
Hand Signals for Automobile Drivers

THE Department of Motor Vehicles of the State of Connecticut, of which Robbins B. Stoeckel is Commissioner, recently issued a leaflet containing the accompanying illustrations showing the method of hand signaling required in that state in connection with the stopping and turning of automobiles. A comparison of these illustrations with the requirements of the Uniform Vehicle Code of the National Conference on Street and Highway Safety and with the new Traffic Act of the State of New Jersey, which became effective September 1, 1928, discloses the following facts:

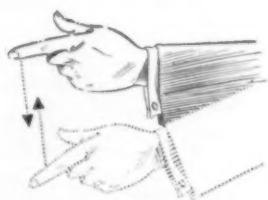
Section 18 of the Uniform Vehicle Code reads:

Signals on Starting, Stopping or Turning

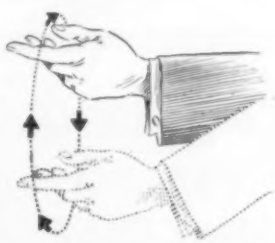
"(a) The driver of any vehicle upon a highway before starting, stopping or turning from a direct line shall first see that such movement can be made in safety and if any pedestrian may be affected by such movement shall give a clearly audible signal by sounding the horn, and whenever the operation of any other vehicle may be affected by such movement shall give a signal as required in this section plainly visible to the driver of such other vehicle of the intention to make such movement.



1. Indicates Intention to Stop or Slow Down.



2. Indicates Intention to Turn Left.



3. Indicates Intention to Turn Right.

N. B.—Each Signal Must be Definite and Distinct.

METHODS OF HAND SIGNALING REQUIRED IN THE STATE OF CONNECTICUT

"(b) The signal herein required shall be given either by means of the hand and arm in the manner herein specified, or by an approved mechanical or electrical signal device, except that when a vehicle is so constructed or loaded as to prevent the hand and arm signal from being visible both to the front and rear the signal shall be given by a device of a type which has been approved by the Department.

"Whenever the signal is given by means of the hand and arm, the driver shall indicate his intention to start, stop, or turn by extending the hand and arm horizontally from and beyond the left side of the vehicle."

The foregoing provisions are embodied almost verbatim in the New Jersey act, but the following additional instructions are included:

"For a right turn, make a sweeping motion from the rear to the front to indicate to drivers of vehicle behind that they may pass to the left;

"For a left turn, point with index finger to the left, to indicate to drivers of vehicles behind that he intends to turn in that direction;

"When stopping or slowing up, keep the arm and hand in a steady position, with palm to the rear.

"No vehicle shall back or make a turn in any street, if by so doing it interferes with other vehicles, but shall go around a block or to a street sufficiently wide to turn in without backing."

Master Construction Glass-Overs for Sludge Beds

Because Port Washington, L. I., covers its Sludge Beds with our Glass-Overs, they could without offence be located right in the park in the main part of the town.

Specialists

ALL of us might just as well admit, that in spite of the recent great advancements, the best of us don't know any too much about the Sewage Disposal question. But there are certain phases of it, that some of us have made a specialty of, and in which we are recognized as experts.

Take the Sludge Bed Glass-Overs, for example. It's safe to say, we have built three times as many as all other builders combined. Just naturally we have three times the experience.

However, that's not all there is to it, by any means. It happens that for over four generations we have been specialists in glass structures, such as greenhouses. One of our operations covered twelve and one-half acres under glass.

All of which means, we have developed a construction of such perfection, in both strength and the sunlight it transmits, that it makes the ideal one for Sludge Bed Glass-Overs.

It's called The Master Construction, because that's what it is.

As evidence of its acceptance by the leading engineers, let us send you a list of installations and the engineer for each.

Lord & Burnham Co.

SLUDGE BED GLASS-OVERS

Graybar Bldg. New York | Continental Bank Bldg. Chicago | Harbor Com. Bldg. Toronto

Branch Offices: Boston, Philadelphia, Irvington, Denver, Kansas City, Cleveland, Buffalo, Greensboro, St. Louis, Montreal, St. Catharines

St. Louis Attacks the Problem of Municipal Parking Space

IN presenting a paper before the International Association of Street Sanitation Officials at the Toronto convention last month, dealing with the relation of public parking facilities to the street-cleaning problem, Robert B. Brooks, Director of Streets and Sewers, St. Louis, Mo., went into the general aspects of municipal provision for the parking of automobiles and told of what is being planned in St. Louis in that connection.

Street Cleaning and the Automobile

Mr. Brooks asserted that the increase in the number of automobiles on city streets made it impracticable to clean in business districts during the day, except by the hand-broom method; that the cost of labor prevents this method's being used on a large scale; and that these streets must be cleaned chiefly after midnight, irrespective of the provision of off-the-street parking facilities. Inasmuch as cleaning work, even at that late hour, is seriously handicapped by parked cars, he recommended that all-night parking be prohibited, as by Section 33 of the Model Municipal Traffic Ordinance sponsored by the National Conference on Street and Highway Safety: "ALL NIGHT PARKING PROHIBITED. It shall be unlawful for the operator of any vehicle to park said vehicle on any street for a period of time longer than 30 minutes between the hours of 2 A. M. and 6 A. M. of any day."

The enactment of such an ordinance would do more to assist the street-cleaning department than any other measure, including the provision of municipal parking space. Conceivably, the latter would assist the enforcement of the ordinance, by providing a fair alternative to all-night parking in streets; but the chief need for municipal parking grounds arises from the vast number of automobiles using the streets during the day, the relatively small amount of parking space on the streets themselves, and the convenience to be afforded motorists and other citizens and officials by providing facilities off the street in addition to those furnished by private means.

Car Registration vs. Parking Facilities in Downtown St. Louis

The population of St. Louis is estimated by the Census Bureau at 848,100. There are 147,031 automobiles registered in the city. In the downtown congested district there is street space for parking approximately 2,500 cars, this being in the section from Fourth Street to Twelfth Boulevard, and from Market Street to Franklin Avenue, an area of 74 city blocks. In and adjacent to this district there are the following off-the-street facilities:

	Cars
Permanent garages for department store customers	1,100
Permanent public garages	5,166
Temporary garages	695
Vacant lots for parking	1,568
Vacant lots for customers	100
Total capacity	8,629

The traffic laws permit one hour parking between 9:30 A. M. and 4:30 P. M., and no parking from 7:00 A. M. to 9:30 A. M. and from 4:30 P. M. to 6:00 P. M. A count made in the winter of 1928 showed 55,795 cars entering the above district during an average day of eleven hours from 7:00 P. M. to 6:00 P. M. Mr. Brooks cited with approval the action of merchants in the downtown section of Philadelphia in combining to provide free parking space for their customers. He stated that parking should not be banned except where it hampers the normal flow of traffic, nor until the available off-the-street facilities can take care of the normal demand at a reasonable charge. He went on to say: "The fact that there are 56,000 automobiles entering the business district in eleven hours is evidence of the need for terminals of some kind within or near this district. With space available for only 11,100 machines, it is easily understood why this district is congested a great deal more than it should be. The reason for this is that it sometimes takes five or ten minutes of driving around to find a parking space, and the driver even then finds himself half a dozen blocks away from his destination. . . .

"We have come to the conclusion in St. Louis that before a 'No Parking' ordinance in the downtown district can be made effective, it will be necessary to have provided off-the-street facilities to take care of the automobiles whose drivers have business within the district."

Expensive Free Parking

Mr. Brooks classified parking into three varieties: first, the loading and unloading of merchandise or passengers, this being an essential part of transportation, but subject to regulation of speed and general convenience; second, live parking, with the driver in position to move the car if necessary; third, dead parking or storage, which involves the use of public property dedicated to transportation needs, for storing private property. As an example of what this means from a public economic standpoint, he mentions conditions found on Olive Street near Seventh Street: "Ten automobiles are parked on ground assessed at $80,000. This means, on a 6 per cent basis, that one automobile is using public property at the rate of at least $480 per year, free to him at the expense of the property owner who does pay his taxes, which includes the right of ingress and egress."

To solve the parking problems in St. Louis, Mr. Brooks advocated, first of all, the providing of by-passes for through traffic, and referred to projects of that nature now under construction or consideration.

Municipal Parking Space on the Levee

As for the second part of the solution, he said: "There should be provided off-the-street facilities for the parking of automobiles with a reasonable charge. A casual survey of the downtown district shows that the present off-the-street facilities for 8,600 machines are totally inadequate. . . . Mr. Reyburn Hoffman, Traffic Engineer of the Department of Streets and Sewers, has recently made a survey for available parking spaces near the congested district to help the parking situation, pending the time when off-the-street storage space will be able to take care of the demands of the district. . . . The Levee district has received his special attention. On that paved portion of the Levee from the Free Bridge to the foot of Franklin Avenue, 3,500 cars can be parked. This is possible without encroaching upon the Levee portion now devoted to switching movements or trucking operations, and out of the way of any normal winter stage of the river. . . . In St. Louis it is one-quarter mile from the Levee to Fourth Street, and four more blocks takes us to Eighth Street, the center of the business district. Our Levee has a distinct advantage over any other area of similar capacity about which we know. It is this—it stretches for over a mile parallel to the business district, thus being accessible to anyone between Chouteau and Franklin Avenues who is situated within easy walking distance. Broadway is a five-minute walk."

He stated that bus service to the business district, and other facilities, may be necessary, and that the people who use this service should pay for it; and said, "When it is definitely shown that this area can take care of 40 per cent more parked cars than our downtown streets, then all useless parking should be abolished in the congested area."

City Revenue from Leasing Land

Mr. Brooks does not favor the city's permanent entry into the garage business, but stated his preference for a system of leasing the land involved to private operators for public service.

As a means of temporary relief he recommends that the Plaza, which lies between Market and Olive Streets from Twelfth Boulevard to Fifteenth Street, be utilized for municipal parking space while undergoing development. If non-productive improvements are removed from the land that has been acquired there will be space for 420 automobiles. As parking lots this land could be made to produce revenue to the city, by renting them out to individuals to operate. This arrangement worked out satisfactorily on the lot now occupied by the Court House.

That these plans are not everything in contemplation for handling the St. Louis parking problem is indicated by the statement that President E. R. Kinsey of the Board of Public Service has been working for two years on a gigantic underground parking scheme in the Plaza district to accommodate 3,000 cars.

The "L" Twin, shown above, mows and rolls 4 to 6 acres a day. With gang units attached it cuts 10 acres a day on one gallon of gasoline.

A Pledge of Dependability

You can bank on the dependability of Coldwell "L" Twin because it is the product of a maker who has specialized in dependable lawn mowers since 1867.

Literature on request

HAND — HORSE

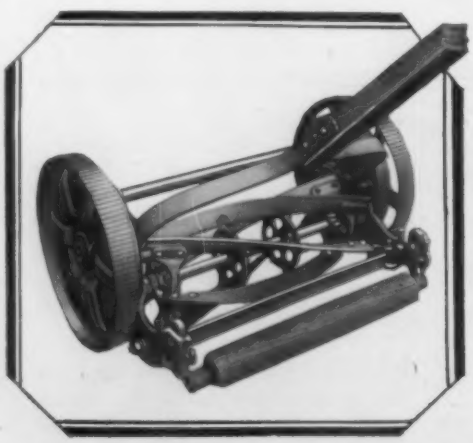
COLDWELL

DEPENDABLE LAWN MOWERS

GASOLINE — ELECTRIC

COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.

Shown in picture on right is the Imperial Roller Bearing—the best mower on the market for hard service. Durable, light, easy to push, and requiring minimum of attention to adjustments.



Timken Tapered Roller Bearings; five keen blades of hardened crucible steel; self-sharpening bottom knife; carefully machined parts to insure perfect operation and long service.

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, *Attorney at Law*

City Had a Right to Sell Light Equipment at a Sacrifice Under Proper Ordinance

The validity of proceedings of the governing authorities of the city of Paducah under which equipment of an electric light plant claimed to be worth $30,000 was sold for $1,800, was the subject of the decision of the Kentucky Court of Appeals in the case of Russell vs. Bell, 6 S. W. (2d) 236. Holding that plaintiff taxpayer's petition failed to show fraud, but that the proceedings might be vulnerable for failure to adopt a proper ordinance, the Court said:

"There is no allegation of fraud in the petition, and without such an allegation appellant is not entitled to recover a judgment against the members of the board of aldermen and the board of councilmen for the difference in the value of the equipment and the price for which it was sold. . . .

"There is no question involved other than whether the legislative boards of the city had the power and authority to sell the equipment without the enactment of an ordinance as is prescribed by section 3058, Ky. Stats.

"Among other things, this section authorized the legislative boards of cities of the second class to sell either real or personal property belonging to the city. . . . If an ordinance was required and none was enacted, it would follow that the sale was made without authority, and therefore void, and a restoration of the property to the city could be adjudged. . . .

"We find no authority vested in a city of the second class to make a sale of its property, either real or personal, other than through the enactment of an ordinance. The city attorney points out no provision of the Statutes which authorized a sale of the property in any other manner."

A City May Regulate the Soliciting of Alms on Public Streets

An ordinance of Charlotte, N. C., forbids solicitation of alms upon the streets of the city without an official permit. Upholding a conviction of representatives of the American Rescue Workers who violated the ordinance on being refused a permit, the North Carolina Supreme Court said, in the case of State vs. Hundley, 142 S. E. 330:

"We find nothing therein unreasonable or oppressive, nor does the ordinance confer upon the governing body of the city of Charlotte arbitrary power to discriminate between applicants for permit to engage in the business of soliciting alms or begging charity, for a charitable purpose, upon the streets of the city of Charlotte. It is made the duty of said governing body to issue the permit to the applicant unless the said governing body shall be satisfied (1) that the said applicant is not worthy of assistance or help from the citizens of Charlotte, or (2) that the cause said applicant represents is not a worthy cause, or (3) that the funds solicited will not be properly disbursed. . . .

"It cannot be held as law that defendants or any other persons have a legal right to use the streets of a city for the purpose of carrying on the business of soliciting alms or begging for a charitable purpose, however worthy, upon the ground that they are thus engaged in the exercise of their religious liberties; nor that the right of defendants to pursue their happiness is unlawfully obstructed by forbidding them to use the streets for this purpose, without a permit from the city, which gives assurance to all who may be charitably inclined that their contributions for a worthy cause will be properly disbursed. The purpose of the city of Charlotte, in adopting the ordinance, was, manifestly, the protection of persons who may be using its streets for the purpose for which they were constructed and are maintained, from solicitation for contributions for charitable purposes by persons who are unworthy, either because of lack of personal character, or because of lack of sufficient judgment to apply the contributions received by them wisely and properly. It would seem that the ordinance will encourage rather than discourage contributions from charitably disposed persons to worthy persons and for worthy causes."

Municipal Officers in Removing Trees Without Following Legal Requirements May Render Themselves Liable to Abutting Owners

A village tree warden and persons helping him in cutting two trees in a street were held to be liable in damages to the owner of abutting property, in the case of Skinner vs. Buchanan, 142 Atl. 72, decided by the Vermont Supreme Court. Buchanan was the tree warden and his act in removing the trees was found to be illegal because he overlooked the necessity for notice and hearing before the trees lawfully could be cut. It appears that in what Buchanan did he acted in good faith and without malice; that it was his opinion that the trees in question were dangerous to the public, in that the maple was rotting and had decayed branches, and the poplar was a nuisance, for the reason that its roots grew into and stopped up the sewers, and made it necessary to dig up and relay the same.

In the course of its opinion, the Supreme Court said:

"While municipalities are universally recognized as having the control and management of public streets and highways, which embraces authority to so construct, change, and maintain them as will best serve the public necessity and convenience, irrespective of the ownership of the fee, abutting owners, as we shall see, have certain rights in such streets and highways which cannot be violated with impunity by those acting without authority, even though the fee be in the public. In other words, the enforcement of those rights, as against wrongdoers, does not depend upon whether the fee to the highways is in the public or in the abutting owner. . . .

"Without dwelling upon the modern tendency to plant, and in various ways protect, shade trees in public ways and places, it is enough to say that such tendency exists, as is evidenced by the various provisions of the statute already referred to and by sections 6950 and 6953, which penalize the destruction or injury of such trees. Such trees are a part of the street, to be used and enjoyed by the traveling public the same as a good roadbed, sidewalk, pavement, or anything else in the street which contributes to the comfort or the pleasure of the traveler; and, generally speaking, whatever renders a street more valuable to the people at large renders it more valuable to an abutting owner, since, as already seen, he has all their rights besides others peculiar to himself."

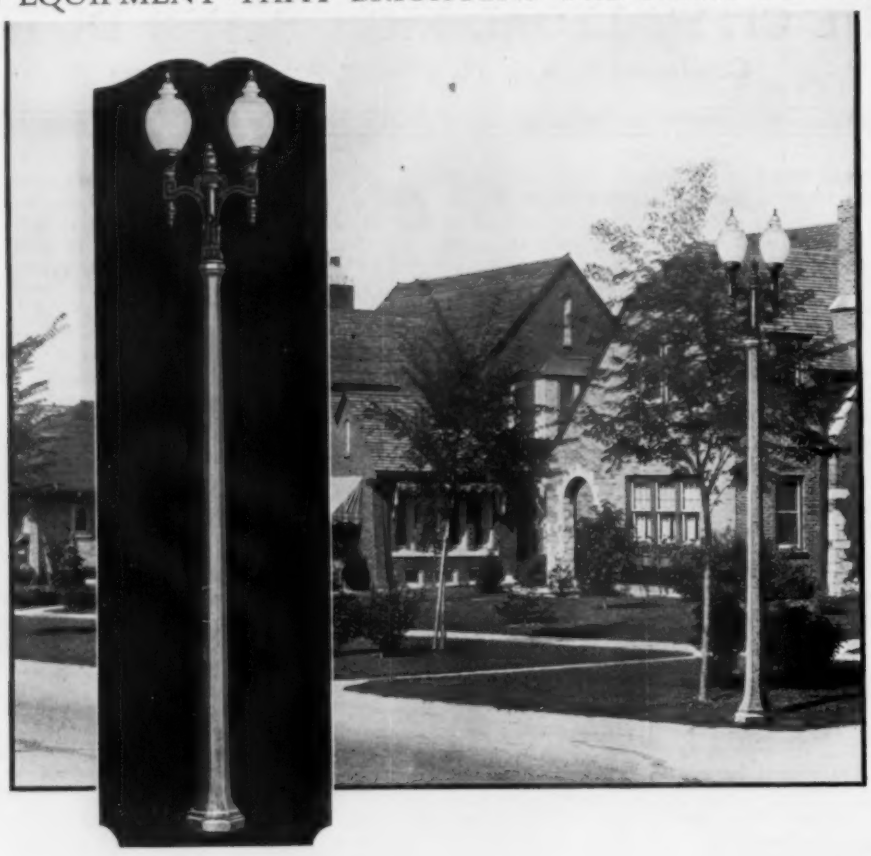
A Primary Is Not an Election for the Purpose of Submitting a Debt Proposition

A Pennsylvania statute requires that a proposition for an increase of municipal indebtedness be submitted to the electors on the day of a municipal or general election, unless more than 90 days elapse between the adoption of the preliminary ordinance and the date of such municipal or general election.

Interpreting this statute in the case of School District of Union Township vs. Walton, 19 Pa. Mun. Law Rep. 240, the Court of Common Pleas for Schuylkill County, Pa., held that it is improper to submit a proposal to increase indebtedness at a primary election. The Court remarked:

"A primary election is a means or method provided by law whereby the members of a political party select by ballot candidates for office to be voted for at an ensuing election. It is merely a substitute for a convention. It is not an election to office, it being distinguishable from an election of officers in that it precedes such election and is merely a choice of candidates or nominees of political parties while an election is the final choice of the entire electorate. At a primary election, each party making nominations is provided with separate and distinct ballots with only the respective nominees on each ballot. There is no general ballot, each elector voting the ballot of his political affiliation and the question of the

LIGHTING EQUIPMENT THAT BRIGHTENS THE PATH TO PROSPERITY



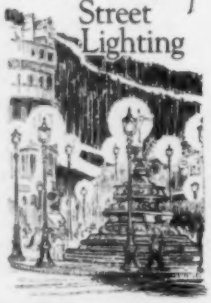
CIVIC attainment is easily secured by the use of this substantial yet artistic combination. This attractive lighting unit, the Capitol City, meets all requirements of modern street lighting. When used as shown on our Columbia double bracket, a great amount of illumination is obtained. This bracket is mounted on The Boulevard, a slender, well proportioned standard whose granite particles glisten and sparkle in the sunlight or under the brilliance of the illumination of the lighting units.

Details and Prices on Request

Ornamental Street Lighting

A bulletin showing all the latest designs in ornamental street lighting equipment including ornamental brackets, glassware, cast iron and concrete standards and capitols. Your copy is waiting—write.

The History of Street Lighting



1816—All of London Main thoroughfare lighted with gas. Paris did same in 1820.

LINE MATERIAL COMPANY

SOUTH MILWAUKEE, WIS. EAST STROUDSBURG, PA.

In Canada: Canadian Line Materials, Ltd., Toronto, Canada. *Export Department:* So. Milwaukee

Albany, N. Y. Boston, Mass. Chicago, Ill. Cleveland, Ohio Dallas, Texas Denver, Col. Des Moines, Iowa Indianapolis, Ind. Kansas City, Mo. Los Angeles, Cal. New York, N. Y. No. Charlotte, N. C. Oakland, Cal. Portland, Ore.

BLACK & WHITE Ask our Salesman LINE IM We make what you want made

BLACK & WHITE Ask our Salesman LINE IM We make what you want made

increase or no increase of indebtedness would have to be printed on all the respective party tickets. While the authorities on this point are not harmonious, the weight of authority is that the word 'election' as used in constitutions and statutes does not include a primary election unless it is expressly so provided. Neither is a primary election an 'election' within the common acceptation of that term or in the sense of the common law, C. J. Vol. 20, section 4. Indeed, a primary election is simply an election within the political divisions by the voters of various political faiths for the purpose of nominating candidates for office and in the opinion of the Court, a primary election is not a municipal or general election within the intent and meaning of the Act of April 7, 1925, P. L. 171, having to do with the passing upon the question of the increase of municipal indebtedness."

General Statutes Apply Where a City's Charter Is Silent on a Given Point—Approval of Contracts by Mayor

While the provisions of a city charter, which have been duly adopted and approved, constitute the organic law of the city and supersede the statutory law of the state in conflict with such charter provisions in so far as such statutory laws relate to purely municipal matters, the provisions of such city charter requiring all resolutions passed by the council to be presented to the mayor for his approval and signature have reference only to such resolutions as are contemplated by charter provisions or statutory enactment not in conflict with the charter. Where a city charter contains no provisions relative to street paving, the general paving law of the state governs. Approval by the mayor of a contract, entered into by the city council of a city operating under charter form of government is not essential in the absence of a special requirement to that effect by the charter or statutes of the state. (Bacon vs. Wimmer, 267 Pac. 261, decided by the Oklahoma Supreme Court.)

A Municipal Franchise for a Bus Line to Carry White Persons Only Held Valid

Pursuant to authority vested in it by the Legislature of Florida, the city of Daytona Beach in November, 1927, granted a franchise to Daytona Beach Motor Lines, Inc., a Florida corporation, for the purpose of transporting white passengers only over certain streets of the city. The franchise was approved by popular vote. Suit was brought to annul the franchise, but the Florida Supreme Court upheld it, in the case of Sanders vs. City of Daytona Beach, 116 So. 23. That court said:

"It is contended here that the franchise brought in question is an unjust and unreasonable discrimination between the white and negro races; that it imposes unreasonable restrictions on a lawful occupation or business; and that it deprives appellants of their property without due process of law.

"A franchise that would have the effect of diverting the streets of a municipality from a public to a private use or that would unreasonably hamper the public in the use of them would be ultra vires and void. . . . Careful examination of the record in this case fails to disclose such unreasonable discrimination or restrictions appellants contend that the franchise imposes, and there is no showing whatever that it would in any way interfere with the public in the use of the streets of the city of Daytona Beach. It appears to have been authorized by the Legislature and by the showing made was granted to safeguard and protect the traveling public."

An Ordinance for Extraterritorial Inspection of Dairies Held Unauthorized

An ordinance of the city of Bartow, Fla., providing for inspection of dairies furnishing inhabitants of the city with milk, and imposing inspection fees, was declared to be void in the case of Root vs. Mizel, 117 So. 380, decided by the Florida Supreme Court. The opinion was grounded on lack of legislative authority vested in the city, but the Court said that even if the ordinance in question had otherwise been unobjectionable it would still have been void for unreasonableness in providing for imposition of a fee of $25 per day for inspections made five miles beyond the city limits.

Validity of Home-Rule City Provisions Considered

Passing upon the organic law governing the city of Rochester, the Appellate Division of the New York Supreme Court decided in the case of Bareham vs. City of Rochester, 222 N. Y. Supp. 141, that a local law providing that no person shall be appointed to a city office who has held an elective office is unjustly discriminatory and unconstitutional.

But a provision for a non-partisan common council of nine members, five at large and one from each of four constituted districts, was declared to be valid.

Master Electricians May by Ordinance Be Required to Display Names of Owners on Store Fronts

An ordinance requiring every registered master electrician having a place of business in the city to "display on the front of his or their place of business a sign, 'Registered Electrician,' bearing the name or names of the persons, firm, or corporation in letters not less than one and one-half inches high," etc., was upheld as being a reasonable regulation, in the case of Conover vs. City of Pleasantville, 142 Atl. 359, lately decided by the Supreme Court of New Jersey.

Density of Traffic in Large Cities Justifies Special Regulations; Ambulance Exemption Does Not Justify Dangerous Speed

An ordinance of the city of Dallas providing for a stop-and-go signal system was upheld in the case of Lamar & Smith vs. Stroud, 5 S. W. (2d), 824, by the Texas Court of Civil Appeals, against a contention that the measure conflicted with the state law regulating traffic. The Court observed that "it is true that no city has power to adopt an ordinance which conflicts with the law of the state," but: "Common observation shows that under conditions frequently existing in those cities the public safety demands some additional regulations of the traffic not found in the state law. The local city's requirement that motor cars stop at congested street intersections in obedience to certain established signals before proceeding across the line of traffic is a salutary regulation, and is not in conflict with the statutory provision limiting the speed at which vehicles may travel before or after passing those intersections."

On another phase of traffic regulation, the Court declared:

"While ambulances are exempted from the speed limitations, they are not exempt from the local regulations prescribed by the city for the control of traffic at street intersections. The fact that ambulances are given the right of way over other vehicles did not license them to disregard the signal regulations when crossing another line of traffic, or to travel anywhere in the city at a rate of speed which might endanger life or property."

When Not Exclusive, a Grant by a City of One Gas Franchise Did Not Preclude Grant of a Second to Another Company

Because there was no provision in a gas franchise granted by a city that the grant should be exclusive, and because there was no controlling statute or constitutional provision, the Arkansas Supreme Court decided in the case of City of El Dorado vs. Coats, 299 S. W., 355, that a second franchise was valid. The opinion notes:

"In this country, as in England, every grant from the sovereign power is to be construed strictly against the grantee, and in favor of the city or government. The rights of the public are therefore not to be presumed to have been surrendered to a corporation, except so far as the intention to surrender them appears in the charter. . . .

"A state or council ought never be presumed to surrender this power, because the whole community have an interest in preserving it undiminished; and, when a corporation alleges that the state or council has surrendered its power of improvement and public accommodation, abandonment ought not to be presumed in a case in which the deliberate purpose of the state or council does not appear."

Three of the justices of the Supreme Court, comprising a minority, dissented from the conclusion reached by the majority that the first franchise was not exclusive.

AN INDEX TO LEGAL DECISIONS

which were reported by Mr. Street in THE AMERICAN CITY *during the four years* 1924-1927 *inclusive, is a special feature of* THE MUNICIPAL INDEX *for* 1928 (*pages* 110-115).

The illustration at the left shows a Holophane Standard Line B-Way Refractor. This refractor is designed for mounting at the side of the street. It directs the light downward and spreads it up and down the street to provide approximately uniform illumination.

PLANNED LIGHTING

Haphazard street lighting —lights strung or set along streets or highways by guesswork or rule-of-thumb—is never efficient and seldom effective.

Such lighting often results in glare, in dark areas between lamps, in wasted current and in high costs of installation and maintenance.

Holophane street lighting is efficient. It is the application of Holophane Refractors in accordance with the fundamental principles of Scientific Street Lighting. Such cities as Cleveland, Detroit, Milwaukee, Minneapolis, San Francisco, Los Angeles, New Orleans and many others use Holophane Street Lighting.

For further particulars, for data on specific installations, for lighting recommendations for streets, parks, bridges, highways, etc., get in touch with the Street Lighting Engineers of the General Electric Company, the Westinghouse Co., the Line Material Co., or the Holophane Co., 342 Madison Ave., N. Y.

HOLOPHANE

NEW YORK • SAN FRANCISCO • CHICAGO • MILWAUKEE • TORONTO

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING *and* PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Ordinances

East Paterson, N. J.—Ordinance, 1928.

Hackensack, N. J.—Ordinance, September 28, 1928.

Hopatcong, N. J.—Ordinance, 1928.

Mount Kisco, N. Y.—Ordinance, January 10, 1928.

Cleveland, Ohio.—Ordinance, adopted October 1, 1928; effective November 10, 1928.

Knoxville, Tenn.—Ordinance, October 15, 1928.

The Easton, Pa., Ordinance

The Department of Internal Affairs of Pennsylvania sends us the following items of interest, furnished it by Morris Knowles, Inc., of Pittsburgh, consultants, with regard to the Easton ordinance, listed in this department last month:

"The ordinance provides for coterminous use, height and area districts. Consequently, there is a somewhat larger number of districts than is usually the case where separate height and area districts are provided. There are four types of residence districts, three types of business districts, and a light and heavy industrial district.

"One of the provisions in regard to height limitations, while perhaps not unique in the strict sense of the word, may be of interest. It is quoted below:

'Section 26—Height of a Tower Fronting on a Park or Plaza

" 'In a main busines district, the height limitation may be exceeded by a tower fronting on a public park, square or plaza at least 2 acres in area provided;

" '(a) Such extra height shall not exceed 10 stories or 125 feet;

" '(b) Such tower shall have a horizontal area not exceeding 25 per cent of the ground area of the building.

" '(c) Such tower shall be removed at least 25 feet from the vertical plans through any adjoining property line.'

"Another clause which may be of interest to you provides that one member of the Board of Appeals shall be a member of the Planning Commission."

Height Regulations in Knoxville

From Harland Bartholomew and Associates, of St. Louis, Mo., information has been received regarding the comprehensive zoning ordinance which the city of Knoxville passed on October 15. This ordinance embodies regulations similar to those in the Evansville ordinance on the height and bulk of buildings. The Knoxville regulations read as follows:

"In the 'H' Business district no building hereafter erected or structurally altered shall exceed a height at the street line of two times the width of the street, but above the height permitted at the street line 4 feet may be added to the height of the building for each one foot that the building or portion thereof is set back from the street line; provided, however, that the cubical contents of such building shall not exceed the contents of a prism having a base equal to the area of the lot and a height of 150 feet."

Certain exceptions to this regulation are made in the ordinance. These exceptions are as follows:

"In the 'B' Business district for a building located on a lot at the intersection of streets of different widths the height permitted on the wider street shall be allowed along the narrower street."

"In the 'H' Business district where streets are less than 50 feet wide, the same height regulations shall apply as on streets 50 feet in width, and on streets more than 100 feet wide, the same height regulations shall be applied as on streets 100 feet in width."

"Buildings may exceed the height limits where foundations or structural provisions have been made prior to the passage of this ordinance in anticipation of a definite height."

Enlargement of Department

This department has been enlarged to include, in addition to zoning notes, the more important current court decisions on city planning. Any items of interest in this enlarged field which our readers are kind enough to send us will be most gratefully received.

Legality of Zoning One Side of Street for Residential and the Other for Commercial Purposes

CALIFORNIA.—*Feraut vs. City of Sacramento,* 269. Pac. Rep. 537.—A municipal zoning ordinance is not illegal because of the fact that a commercial zone is situated directly across the street from a residential zone, on the ground that it thereby favored those owning property on the side of the street permitting use for commercial purposes; nor by the fact that the commercial property was enhanced and the residential property reduced in value, by the classification.

The system employed in the ordinance covering the entire city, of classifying the territory along the river and the railroads as industrial districts and adjacent territory as business districts, with certain small areas in the residential areas, classed as business districts, is sufficiently general, uniform and comprehensive to be valid in law. In zoning much must be left to the discretion of the municipal authorities, and the fact that a certain amount of financial injury results does not show that the discretion was improperly exercised.

Coal and Ice Business, with Stable for Horses, Permitted in Absence of Zoning Ordinance

GEORGIA.—*Barton v. Rogers,* 144 S. E. Rep. 248.—A coal and ice business, including a stable for horses and mules to be used in the business, conducted on a lot fronting on a residential street, is not a nuisance *per se,* since it cannot be claimed to be a nuisance at all times and under all circumstances.

Mere anticipation of injury amounting to nuisance, apprehended to ensue from conduct of a lawful business in an improper manner, will not, therefore, authorize the grant of an injunction.

For these reasons, a petition to restrain the establishment of a coal and ice business on a vacant lot adjoining the residences of the petitioners, alleging that the defendants intend to conduct a stable for horses and mules to be used in the business, that the contemplated business would cause constant disruption to the peace of the neighborhood and unhealthful conditions, as well as noises in the early morning, and would constitute an eyesore, making nearby homes almost valueless, did not state sufficient facts to show that the business complained of constitutes a nuisance.

NOTE BY EDITOR: There seems to have been no zoning ordinance in force in the municipality in which the areas in question were situated.

In accord, *Kahn v. Standard Oil Co.* 144 S. E. Rep. 241 (Georgia).

Replacing Barns Destroyed by Fire

NEW YORK.—*Empire City Racing Association v. City of Yonkers,* 230 N. Y. Supp. 457.—Where use of premises as a race track had not been abandoned at the time of the passage of the zoning ordinance placing the premises in a residence district, the owner was entitled to a writ of mandamus to compel issuance of permits for the erection of new barns to replace barns destroyed by fire.

Public Restaurant Prohibited in Apartment House

NEW YORK.—*People ex rel Fullman v. The Milroy Corporation,* Court of Special Sessions, Part 1, New York City.—The defendants are charged with occupying a portion of a building in a residential district as a public restaurant. The building in question was an apartment house, and the defendants claimed that the restaurant was not public but was for the use of their tenants, and therefore an accessory use, allowed by the zoning resolution.

Held, that the character and location of the signs on the building showed that the restaurant was intended to be for the use of the general public as well as for the tenants of the apartments, and the defendants were therefore found guilty.

Road Building need not Disrupt Business!

Hunt Process cure gives a quick clean job and makes concrete actually stronger*—

NO longer need merchants curse the road-contractor for loss of customers—isolation of business houses. The Hunt Process of curing concrete gets the jump on old-fashioned methods—opens pavements days earlier, reduces traffic interruptions to a minimum!

Forty-eight hours after pouring the concrete the road will stand foot traffic! No dust-damaged merchandise caused by removal of dirt after ponding. At the same time the Hunt Process eliminates the cumbersome operations of slower methods—hauling the dirt, making the ponds, clearing the mud at the end of the cure.

What a contrast between a Hunt Process job and a "ponding" job! The picture below speaks for itself—a typical ponding cure—"for rent" signs on the buildings—road practically impassable for weeks.

Above, the Hunt Process is curing a pavement on one of the main streets of Leadville, Colorado. Note how closely the application of the cure follows the pouring machine. How clean and free the new pavement is! No further operation is necessary. It can be opened to foot traffic in two days!

The Hunt Process has been tested and approved by the City Engineering Department, city of Los Angeles, and 67 other cities in the United States, including Honolulu.

Our illustrated booklet, "Curing Concrete without Dirt and Water" gives valuable data on comparative tests. Mailed free on request.

Hunt Process makes concrete actually 8½% stronger than the dirt and water cure. Comparative tests of 296 cores have proven this conclusively. As the cure progresses, the protective coating becomes an integral part of the concrete.

Typical ponding job—little traffic—stores "for rent." The Hunt Process eliminates this picture!

McEVERLAST, INC.

(formerly Everlasting Paint and Sales Co.)

1110 Board of Trade Building, Los Angeles, California
Branch Office—1314 Magnolia Building, Dallas, Texas

Encroaching on Land Under Navigable Water

LOUISIANA.—*State v. Timothy*, 117 So. Rep. 812.—The defendant had erected a permanent public bath-house, which he was conducting as a business, on piling driven in the bed of Lake Ponchartrain, about 300 feet from the shore line. *Held*, that he was guilty of *purpresture*, or encroachment upon the land under navigable water, the property of the state. The doctrine that such lands, unless granted away, are public property, applies to the state of Louisiana.

NOTE BY EDITOR: See *State v. Forsyth*, 162 N. E. Rep. 661; also with regard to title to land under water generally see *Foreshore and Rights in Land Under Navigable Waters in the New York Region*, by Frank B. Williams, being a Reprint of Part IV of Survey Volume V published by the Regional Plan of New York and its Environs, 130 East 22nd Street, New York, 1928.

Allotter's Restrictions Cannot Protect Against Right of Eminent Domain

OHIO.—*Norfolk and Western Railway Co. v. Gale.*—Petition by property owners in addition restricted by private covenant and zoning ordinance to private residences, to enjoin the railroad, which had purchased the property at private sale, from using it for railroad purposes until it had acquired the property by condemnation. *Held*, that the plaintiffs could not recover damages for the use of the property for railroad purposes, and therefore were not entitled to the injunction. The Court cites, as controlling, the case of *Doan v. Cleveland Short Line Railway Co.* 92 Ohio State 461, 112 N. E. Rep. 505 in which the Court says:

"Where an allotter adopts a plan for the improvement of his allotment whereby the use of the lots is restricted exclusively for residence purposes, such restriction cannot be construed as applying to the state or any of its agencies vested with the right of eminent domain in the use of the lots for public purposes.

"Where a company or any agency of the state vested with the right of eminent domain has acquired lots in such an allotment and is using the same for public purposes, no claim for damages arises in favor of the owners of the other lots on account of such use."

Right to Maintain Fence

NEW YORK.—*Erit Realty Corp. v. Sea Gate Ass.*, 249 N. Y. 52.—Where a land improvement company had laid out a residential park and, in order that the residents might be secure in the enjoyment of their property, had erected and maintained a high fence along the line of a portion of its land at the time it deeded a portion thereof to plaintiff's predecessor in title, and it and its successor continued to maintain such a fence, with gates and guards who denied admission to persons who were not lot owners or were entitled in the right of an owner to entrance, the conclusion is compelled that plaintiff took its easement in the streets, subject to the right of the original grantor or its successor reasonably to bar access and egress by means of a fence along the line where it was originally set up. An injunction to restrain the defendant from maintaining any fence or gate or from interfering with plaintiff's alleged rights of ingress and egress was therefore properly denied.

Dedication of Streets

OREGON.—*Menstell v. Johnson*, 266 Pac. Rep. 891.—While common law dedication of real estate rests on estoppal, statutory dedication, in Oregon, by recording plat, operates by way of grant.

Where the owner thus dedicated streets, with building lines, public easements were created of light, air, etc. The public, accepting, improving and using the streets, cannot be deemed to have abandoned these easements.

Some Major Considerations in the Planning of Regional Highways for New England

By WARREN H. MANNING
FELLOW, AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

WE must first think of the ways into New England from the world and our continent. Boston harbor will always be an important transatlantic port by reason of its nearness to Europe, its natural advantages and its facilities.

Portland is a Canadian outlet, and Providence came near to being one. New London has deep waters. By 1930 Albany will be the ocean traffic end of New York's harbor, and to the northward is Montreal. These all compete with Boston for the water-borne traffic and are objective points for its earth and air traffic ways.

The New England mountain chains and masses and its salt- and fresh-water shores are the objective points for a great territory out of New England. Adequate pleasure roadways, airways, bridle and foot ways must be laid down in connected systems to serve everybody who is seeking landscape beauty, historic values, and recreation therein.

Commerce, Recreation, Agriculture, Taxation

This "everybody" includes not only our visitors but our workers in art, literature and industry. I feel that the future of New England industry is to be constantly on the up-grade, with our advantages, and especially with the new-born cooperative leadership that includes representatives of all New England states.

New England agriculture will also increase in the valleys, if it can escape the bugs, and when there is more real knowledge and less guessing as to soil conditions and capacities and more drainage of fertile alluvial areas.

There is also a problem of assessment and taxation and of curbing expenditures to be faced, as indicated by the situation in industrial Lowell and elsewhere and in some summer resort towns. Commerce, recreation, agriculture, taxation, are controlling factors in regional highway planning and also topography.

The Easiest Routes Available for Trunk-Line Highways

The lines of least resistance for great trunk-line highways are seashores and river valleys. The barrier that cuts New England from the continent to the westward is the Green Mountain Range from Canada to New York. The easiest way into our state from the southeast and northeast is along the shores. The Connecticut Valley is the easy way north and south. From the great West the easy way is by the Mohawk Valley of New York through Mechanicville and Troy into Massachusetts through a corner of Vermont and by a highway tunnel that some time will parallel the Hoosac Tunnel to the Connecticut Valley and eastward and southward.

I have endeavored to lay down some of the big planning factors that must be considered in all regional city and town planning.

The trunk-line highways must be wide enough for preferably 10-foot lanes for each of the following traffic lines:

Merchandise trucks	20 feet
Motor-busses	20 feet
High-speed motors	20 feet
Low-speed motors	20 feet
Parking strips	20 feet
Walks and trees	30 feet
	130 feet

Such main ways will connect with the 500-foot-wide cross-continental way proposed by Senator DuPont to by-pass cities.

You will recognize that the move of people from hills to wide valley highways that is going on so rapidly will mean the abandonment of upkeep for vehicles on much of our present road system. The high cost of the main roads will be another factor in the abandonment program that should be part of our studies.

Many, perhaps the most, of these abandoned roads should be held for bridle trails and foot paths and not returned to adjacent owners.

A test of the future that will determine the upkeep of traffic and pleasure ways will be the revenue that comes directly or indirectly for construction and upkeep from the volume of traffic, from the tax return on the lands that are served, and from fees from camping, hunting and other privileges in the untaxed public holdings. These untaxed holdings represent in some states about a third of the total acreage and a fifth of the taxable land values. These are and must be more and more supported from such fees rather than from general taxation.

—From an address before the Massachusetts Federation of Planning Boards, October 5, 1928.

It's not too late—

ALTHOUGH the season for road building and repairs is nearly over, you can still complete that urgent job which needs doing before winter sets in.

Barrett's speedy and dependable service will help you.

Take advantage of the few favorable days remaining—and the availability of Tarvia and Barrett distributors—to complete your program.

Phone, write or telegraph.

Tarvia
For Road Construction Repair and Maintenance

The Barrett Company

New York	Chicago	Minneapolis	Cleveland	Philadelphia	Birmingham	Boston
St. Louis	Salt Lake City	Syracuse	Providence	Buffalo	Bethlehem	Kansas City
Detroit	Milwaukee	Baltimore	Toledo	Cincinnati	Lebanon	Columbus
Youngstown						Rochester

In Canada:
THE BARRETT COMPANY, Limited: Montreal, Toronto, Winnipeg, Vancouver

MUNICIPAL AND CIVIC PUBLICATIONS

Orders for books reviewed in this department will be filled promptly by THE AMERICAN CITY. Pamphlets, reports and all other publications should be ordered direct from addresses given. Prices do not include postage unless so stated.

Planning Problems of Town, City and Region.—Papers and Discussions at the 20th National Conference on City Planning. Wm. F. Fell Co., Philadelphia, Pa. 1928. 246 pp. $3.00.

This conference, held in Dallas and Fort Worth, Texas, last May, and reported in this volume, exemplified the wide range of subjects coming within the scope of the city planner. The effects of city planning on traffic, on city finance, and on esthetic development are among these, as are the effects upon city planning, of the law, the city government and public opinion. Special attention is given to the problem of educating the public for city planning; to the planning of undeveloped areas; and to the establishment of building lines or setbacks as a part of a planning program. General principles of city planning and of zoning are presented and discussed; and a number of special topics are subjects of papers, including a technical study of building density in relation to open spaces and traffic facilities; matters of airports and airways; and the Westchester County park system. The specific accomplishments of various Texas cities are described. The subject of long-term budgeting of city planning programs is treated in connection with a discussion of how a city plan may reduce taxes or debt.

A Practical Program for Making City, Town and Village Plans.—Prepared primarily with reference to the various communities in the metropolitan region of some 50 miles radius about New York City, this 32-page booklet by Wayne D. Heydecker, Public Relations Field Secretary for the Regional Plan of New York and Its Environs, contains many concise and practical suggestions on the securing of plans, of interest to local communities in general. A foreword by Thomas Adams emphasizes the need of planning, comprehensively and in advance of development where possible, and sets forth the relation of regional planning to community planning. In the body of the pamphlet are sections on procedure in starting a planning program, elements in community planning, and procedure in preparing and giving effect to the plan. 25c. (Apply to Regional Plan of New York, 130 East 22d St., New York).

Zoning Cases in the United States.—By Edward M. Bassett and Frank B. Williams. A 60-page "Appendix to Volume VI of the Regional Survey, published in advance for immediate reference," by the Regional Plan of New York and Its Environs, 130 East 22nd St., New York. It lists and classifies over 600 important cases in which zoning has been brought before the courts of 38 states. The volume is not a digest but a citation of state and federal opinions, and it should act as a valuable guide to city officials faced with practical problems of framing, amending and administering zoning ordinances. $2. (Apply to the publishers.)

Public and Private Welfare, Roanoke, Va.—A study made by Frank William Hoffer, Associate Research Professor of Public Welfare, Institute for Research in the Social Sciences, University of Virginia; and published by the Roanoke City Planning and Zoning Commissions, the Roanoke Chamber of Commerce, and the Roanoke Community Fund as a part of a comprehensive city survey. In addition to the wealth of facts and figures given under the various divisions into which the study falls, there is a chapter on "Welfare Problems and Development" with suggestions for possible future organization and activities. Appended to the whole is the report of a Joint Committee on Public and Private Welfare Work appointed for the purpose of studying the survey and suggesting ways and means for a better welfare program for the city. 142 pp. $2. (Apply to Roanoke Community Fund, Roanoke, Va.)

Notes With Reference to Playground and Recreation Areas.—Specific layout requirements for playground ball, lacrosse, soccer football, outdoor basketball, American handball, and curling are discussed by Albert D. Taylor in the section devoted to Landscape Construction Notes in the quarterly issue of *Landscape Architecture* for October, 1928. Full-page diagrams and plans for each. 12 pp. 75c. (Apply to *Landscape Architecture*, 9 Park St., Boston, Mass.)

The Interpreter Geddes.—By Amelia Defries. Foreword by Rabindranath Tagore. Introduction by Israel Zangwill. Preface by Lewis Mumford. Boni and Liveright. New York. 1928. xii + 334 pp. $3.00.

Who is Patrick Geddes? He is one of the original thinkers of the times, and one whose thoughts are confined within no fixed bounds of scientific or professional interest, one whose thinking has led to significant action in many places, and in some places has become public policy. Notably, Mr. Geddes is credited with responsibility for the revival of the Cities Movement in Great Britain and with originating the now common idea of city survey. As long as ten years ago, he was lecturing on the to-day still new notion of regional planning and the devolution of metropolitan centers. In 1915 "he was determined to hawk civics around the world, if he had to take it in a barrow"; while, "by 1919 . . . a miracle had been worked in India, where town planning is now the subject of conversation at fashionable tea parties." He has planned or replanned some fifty cities in Europe and Asia. In his "Town Planning Towards City Development," a weighty two-volume report made for the officials of Indore, Zangwill finds a whole history of civilization —and something besides. He says: "I know of no such transfusion of the practical by the spiritual, strange as it is to come upon it in this professional report of an architect." Then he adds what finally becomes clear as being the whole point of the book, and the man's philosophy: "Geddes is out, not for town planning, but for world planning; and his real theme is the rebuilding of our crumbling civilization."

Miss Defries' sympathetic interpretive study treats of a man of complex personality: of Geddes, Professor of Botany in St. Andrew's University; of Geddes the biologist, pupil of Huxley and Haeckel and collaborator on numerous works on evolution and sex; Geddes, the sociologist and "social geographer"; the designer of student quarters in London and Edinburgh, of Oriental temples and gardens and of the new university in the new Jerusalem.

The South Tyneside Regional Town Planning Scheme.—A report prepared by Albert E. Brookes, Civil Engineer, outlining the proposed development of a large industrial area on the south of the Tyne. This report has been approved and is published by the Regional Joint Town Planning Committee. Its 68 pages, profusely illustrated with maps and photographs, give a detailed picture of the region, with its historical backgrounds, its roads and railroads, bridges, etc., with planning proposals, and a general section on zoning. A similar scheme is under way for the North Tyneside and will be published at a later date. The present study with 4 folded maps is available at 10 shillings, 9 pence, plus postage, from W. Swinburne, Esq., Town Clerk, Gateshead-on-Tyne, England.

Practical City Planning in Pennsylvania.—The 48-page Bulletin of the Pennsylvania Association of Planning Commissions issued September 1, 1928, contains interesting and valuable reports, papers, and discussions delivered at the 1928 annual city planning conference at Altoona. (Apply to Leo J. Buettner, Sec.-Treas., Johnstown, Pa.)

Proceedings of the Fourteenth Annual Conference on Highway Engineering, University of Michigan.—The College of Engineering of the University of Michigan, the Michigan State Highway Department and the Michigan Association of Road Commissioners and Engineers cooperated in the holding of this conference, which took place at the University on February 14-17, 1928, with a registration of 584. The Proceedings appear as an official publication of the University, under date of September 1, 1928, contain 302 pages, and include 20 addresses or papers in keeping with the aim of the Conference to supply road commissioners and highway engineers with information on department organization, traffic regulation, designing and financing of highway improvements, qualities of highway materials, and the construction and maintenance of roadways and bridges. Supplementary subjects include snow removal, roadside development, county road marking, and causes of highway accidents. (Apply to College of Engineering, University of Michigan, Ann Arbor, Mich.)

Proceedings of the Fourth Annual Short Course in Highway Engineering, Texas A. and M. College.—This course, held at College Station, Texas, March 21-23, 1928, is reported in Bulletin 36 of the Texas Engineering Experiment Station, dated July 1, 1928, comprising 190 pages. The course is sponsored by the Civil Engineering Department of the Agricultural and Mechanical College of Texas, and brings together engineers, contractors and others interested in the road and street problems of Texas. The 1928 registration was 93. The current volume prints fourteen papers, on asphalt, concrete and brick pavements; alignment; bases; engineering research; and cooperation between engineers and contractors. Compiled and edited by Prof. J. T. L. McNew. Illustrated by photographs and diagrams. (Apply to F. E. Giesecke, Director, Texas Engineering Experiment Station, College Station, Texas.)

Report of the Investigation of Paving and General Highway Conditions.—This investigation was made by an engineering commission appointed by the National Paving Brick Manufacturers Association. The commission was composed of four highway engineers, the chairman being William H. Connell, Consultant, and former Chief Executive of the Pennsylvania State Highway Department. The investigation included conferences and correspondence with federal, state and local officials, a study of technical literature, a general field inspection of typical paving conditions with special emphasis on brick paving, and a general discussion of highway business and the engineering and economic principles considered desirable for it. Besides the physical characteristics of pavements, such matters are gone into as the location of highways, planning of highway systems, highway administration, and traffic data and studies. There is also a statement of standard types of road surface applicable to various conditions throughout the country, with a general discussion of the brick paving situation, and the results of special investigations with recommendations as to specifications and construction. A concluding recommendation is made for the use of vitrified paving brick under the conditions set forth in the report. 24 mimeographed pp. (Apply to the Association, National Press Bldg., 14th and F Sts., Washington, D. C.)

The Credentials of Governmental Research.—A 46-page pamphlet consisting of "Letters from the Chairmen of the Boards of Trustees of the Bureaus of Governmental Research, expressing their belief in research, and noting the more important accomplishments of individual bureaus." A Directory of Governmental Research Agencies appended. 30c. (Apply to Governmental Research Association, 261 Broadway, New York.)

For curing concrete results are POSITIVE with the new CURCRETE method

No ponding, no earth or hay-curing. No question as to the sufficiency of the application. No attention after it is applied.

Curcrete is a bituminous emulsion manufactured especially for curing concrete. It is sprayed on the concrete immediately after finishing, and results in a more uniformly cured slab of increased strength. It effectually prevents surface hair-cracking, checking and scaling, and increases resistance to surface abrasion.

The Curcrete method costs no more than any other adequate method. Curcrete can easily be applied at the rate of 150 to 200 square yards per hour. One gallon covers from 8 to 10 square yards, and the machine for applying Curcrete can be operated by one man.

Besides being ideal for curing concrete highways, the Curcrete method can also be used to advantage in curing concrete foundations intended for bituminous wearing surfaces, concrete sidewalks, floors, platforms, bridge decks, roof decks; all flat slab surface concrete construction.

The Curcrete booklet, illustrated, tells all about this new and superior Curcrete method of curing concrete. We will gladly send you a copy—write us today.

"Curcrete" (trade-mark registered) is sold for use in the curing of concrete by the "Curcrete" method (U. S. Patents 1,539,763 and 1,684,671, and foreign patents pending) controlled by The Barber Asphalt Company. The Barber Asphalt Company grants to the purchasers of "Curcrete" the right and license to practice the "Curcrete" method of curing concrete, controlled by it, in connection with the use of "Curcrete" produced by it, and the purchasers by accepting "Curcrete" accept the license and acknowledge the company's rights in connection with the "Curcrete" method.

The Barber Asphalt Company

Philadelphia

New York Chicago Pittsburgh St. Louis Kansas City San Francisco

CURCRETE

Reg. U. S. Pat. Off.

The American School and University.—American School Publishing Corporation, 443 Fourth Avenue, New York. 1928. 382 pp. $5.00.

This new yearbook has to do primarily with educational buildings, grounds and equipment, including the planning, construction, utilization, and maintenance of the former. It is intended to meet the need for an annual publication that brings together authoritative and timely information, both general and specialized, in this field, including where to obtain materials, supplies, equipment and services. There are 54 articles by educational officers, architects, engineers and other experts; they are grouped in six sections: I, Planning and Construction of Educational Buildings; II, Utilization and Maintenance of Buildings and Grounds; III, Gymnasium, Swimming Pool, Athletic Field and Playground; IV, Classroom, Office, Library and Auditorium; V, Cafeteria and Home Economics; and VI, Laboratory and Shop. The specific topics included relate in the main directly to the physical aspects of the field; certain ones less directly of this character have to do with planning the location, size and character of schools, for future requirements, selling school bonds, standardized cost accounting, and centralized purchasing. There is a directory of available architects who have each designed a number of educational buildings; a chemical index of interest to school laboratories; and various lists of products, services and manufacturers. The volume is the successor to *The University Purchasing Guide*, which was purchased by the present publishers, affiliated with THE AMERICAN CITY; it represents a very considerable enlargement in scope, with the purpose of increased usefulness to school and university authorities concerned with the physical provisions for education.

Custom House Guide, Edition of 1928.—Editor, A. G. McCourt, ex-Acting Deputy Collector of U. S. Customs and Assistant Superintendent Bonded Warehouses, Port of New York. xxv + 1,326 pp. $5.00 postpaid.

Sixty-six years ago the first "Warehouse Manual and General Custom House Guide" was issued by a New York Custom House official. Since that time the "Guide" has grown till it includes, in the current edition, comprehensive information concerning every principal Customs port of the United States, Hawaii, Virgin Islands, Porto Rico, Philippine Islands, and Canada, including personnel, facilities, equipment, etc. This is in addition to its compilations of practical data for those doing business connected wth Customs, brokerage, importing, exporting, shipping, warehousing, forwarding, etc. It is the only complete and authoritative reference book in its field.

Promotion of the Welfare and Hygiene of Maternity and Infancy.—A 150-page publication issued by the Children's Bureau, U. S. Department of Labor, Washington, D. C. (Pub. No. 186), reporting on the administration of the Act of Congress of November 23, 1921, for the fiscal year ending June 30, 1927, giving a summary of state activities in all types of work concerned for the year. It gives also results of the five years' work under the Maternity and Infancy Act, and principal activities by states. 25c. (Apply to the Children's Bureau for single copies; for additional copies, to the Government Printing Office, Washington, D. C.)

The Enforcement of Real Estate Tax Liens.—By Carl H. Chatters, City Auditor, Flint, Mich. Publication No. 10, Municipal Administration Service, 261 Broadway, New York. An authoritative contribution to a hitherto neglected subject. The need of an efficient law for enforcement of tax liens; classification of present tax sale laws; a survey of present tax sale methods; and suggested procedure for the assessment, levy and collection of taxes;—these are some of the topics discussed by Mr. Chatters who also gives the requisites of a satisfactory tax lien enforcement law. Data on uncollected taxes are given for larger cities of the United States. 52 pp. 35c. (Apply to the Municipal Administration Service.)

Educational Opportunities of Greater Boston.—A catalog of day and evening courses for working men and women, compiled by the Prospect Union Educational Exchange, conducted by the Prospect Union Association. 146 pp. 50c. (Apply to the Association, 760 Massachusetts Ave., Cambridge, Mass.)

City Growth Essentials.—By Stanley McMichael, Realtor, and Robert F. Bingham, Attorney-at-Law. The Stanley McMichael Publishing Organization, Cleveland, Ohio. 1928. 430 pp. $5.00.

The development of the United States into an urban nation, with over half of the population living in cities, large and small; and the rapid and extensive changes in cities themselves, due in part to this shift of population and in part to changes in our material civilization, all serve to make the study of urban land and the factors affecting its utilization and value of prime importance. This is a field where comprehensive research has been relatively scarce, but where it promises to be profitable, both materially and intellectually. The present volume, by two authors who have each written on allied subjects, represents an extended study of urban growth and its consequences, and an attempt to make evident the conditions under which it will take place. It is arranged in three general parts: I, on the origin and growth of cities; II, on city real-estate values; and III, modern tendencies in cities. There are 31 chapters, including general ones such as "The City—Its Function" to specialized ones such as "Chain Stores as a Type of Tenancy." It is profusely illustrated with some 126 halftones, and diagrams, from foreign as well as American sources, which lend additional interest to the text.

Stay Alive!—By Marcus Dow. Published by Marcus Dow, Inc., New York. 1928. xx + 209 pp. Illustrated. $2.00.

For fifteen years Marcus Dow has worked intensively to educate the public to prevent accidents. He now introduces Jim the Truckman, who speaks in his own way, out of his own experience, to show careless motorists and pedestrians what dangerous fools they are. Cartoons by H. S. Zoll help to make these "Kicks" uncomfortable. See pages 132 and 133 of this issue for extracts and illustrations which reveal Jim's well-founded indignation. The book has been put upon the market at a reasonable price with the idea of securing wide distribution in the interests of public safety—for which every individual and many organizations are responsible.

Traffic Work of Police Departments.—Pamphlet 18, Public Safety Series, issued by the National Safety Council, 108 E. Ohio St., Chicago, Ill., is designed to answer the questions: What is the normal or typical traffic force for a city of any given size? and how can a traffic police force be organized and operated so as to produce the best results? It is based upon actual conditions in over 100 cities, supplemented by the experience and observations of the Council's traffic engineering experts. 30 pp. 25c. (Apply to the Council.)

Survey of Recreation Facilities, Seattle, Wash.—Shortly after taking office, past-Mayor Bertha K. Landes appointed an unofficial committee with representatives from school and park boards to study the city's whole recreational facilities under municipal control, with the aim of avoiding duplication, cutting down overhead when possible, and utilizing combined facilities of school and park systems for the benefit of the whole population. The published 82-page report with folded "recreational map" insert is an eloquent story of how Seattle stands in public recreation organization; a demonstration of intelligent cooperative effort in survey-making; and a suggestive document for municipal officials elsewhere. (Apply to O. C. Dutton, Park Board, Seattle, Wash.)

The Employment of Women at Night.—By Mary D. Hopkins. Bulletin 64, Women's Bureau, U. S. Department of Labor, Washington, D. C. The United States experience, the foreign experience, historical backgrounds, and the status of legislation are shown with the text of the Bern and Washington conventions, and the extent to which the Washington convention has been ratified in other countries. An interesting section is devoted to the medical, social, and economic testimony regarding night work for women. Statistics, tables. 86 pp. 15c. (Apply to Government Printing Office, Washington, D. C.)

The Local Self-Government Institute, Bombay Residency.—A 36-page pamphlet containing the Proceedings of a Conference of Local Bodies of the Presidency, 1927, the Constitution of the Institute adopted at that Conference, and the program for 1927-1928. (Apply to the Institute, Bombay Presidency, Poona, India.)

Golf Architecture in America: Its Strategy and Construction.—By George C. Thomas, Jr., Times Mirror Press, Los Angeles, Calif. 1927. 342 pages. $6.00.

This is a substantial contribution to the extremely limited literature of what is, in America at least, a comparatively new profession. It comes at a time when the amount of construction work which is being put underway or is in prospect for the near future, outruns the specialist designers available in the field. The author, who is the designer of some of the most beautiful and famous courses in the country, including two Los Angeles municipal courses, describes his own working methods as these constitute sound practice, and discusses in considerable detail the many factors to be given consideration in golf-course construction work. Thus his work has been made invaluable to the beginner in professional golf architecture. Construction committees and the heads of municipal recreation departments that include golf links among their facilities will also find much of direct interest to them in what Mr. Thomas has to say. The book is beautifully made and illustrated; is pleasantly discursive in style; and, having been written by a man who is an enthusiast for good golf as well as for good golf courses, is broad enough in its scope to include a final chapter on "Arbitrary Values" which advocates counting half a stroke for each putt instead of a full stroke. Among suggestive chapter headings are the following: "Different Courses"; "The Strategy of the Golf Course"; "Something About Choice and Construction"; "The General Plan of the Property"; "Beauty and Utility"; "Adapting Courses to Grounds"; "The Ability to Create"; "The Balance of Area"; "Actual Construction"; and "The Remodeling of Old Courses."

Municipal and Public Golf Courses in the United States.—A 1928 edition of the directory compiled and published by the Public Links Section, United States Golf Association. It is arranged alphabetically by cities, complete statistical information being shown for each course. 28 pp. (Apply to the Association, 110 E. 42nd St., New York.)

New Jersey Expenditures for Government.—An analysis of costs of state, county, school, and local governments for 1923 and 1927. The individual total and per capita expenditures are given for nearly all places; and fire, police, and health department figures are shown, as well as bonded debt, debt ratio, per capita debt, net valuations and tax rates. Embracing Reports 197-217, inclusive, of the Bureau of Municipal Information, New Jersey State League of Municipalities; Sedley H. Phinney, Director. (Apply to the League, 34 West State St., Trenton, N. J.)

Parole and the Indeterminate Sentence.—A special committee of three, appointed by the presidents of three universities from their faculties, have, by request of the State Division of Pardons and Paroles, spent more than a year studying the workings of the indeterminate-sentence law and of parole in Illinois. Should these be abandoned, or continued? If abandoned, what substitute should be found, and if continued, what changes, if any, should be made? Findings and recommendations are incorporated into a 280-page report addressed to the Hon. Hinton G. Clabaugh, Chairman, Board of Parole of Illinois. It is recommended that the present laws be kept; and that the parole system be accorded freedom from political influence similar to that granted public schools and state universities. This is a scholarly investigation into an important subject. (Send 10c for postage to Frederick Rex, Municipal Reference Librarian, City Hall, Chicago, Ill.)

Year Book and Directory, National Council of Women of the United States, Inc.—Containing a history of this organization since 1888, "which is really the history of our women since they began to take active part in the social, economic, and political activities of the country;" detailed records of the 34 member organizations; membership list and other information of the International Council of Women; a list of important non-member organizations; and various other information, including the Proceedings of the Fourteenth Convention held in New York, December, 1927. $2 postpaid. (Apply to National Council of Women, 370 Seventh Avenue, New York.)

QUICK!

no blocking of traffic

no damage to roadway

Obtain new openings

with the

Armco Jacking Method

THE Armco Jacking Method eliminates the disadvantages that result from the use of an open trench to obtain needed openings under roadways—the pavement is not damaged, there is no subsequent settlement to the fill, no inconvenient detour or costly false-work. You simply jack the Armco Corrugated Iron Pipe through. What is more, this better way usually gives a substantial reduction in cost. Many engineers report savings of 60 to 75 per cent as compared with open trench estimates.

The experience of Armco engineers is yours for the asking on pipe jacking jobs. No obligation. Write us for bulletin, "Reducing the Cost of Culvert Placement," and other practical working data not available through any other source.

Forty manufacturing plants throughout the United States and Canada assure you immediate service on drainage requirements, no matter where you may be.

ARMCO CULVERT MANUFACTURERS ASSOCIATION
MIDDLETOWN, OHIO

ARMCO *Corrugated* PIPE

©1928, Armco Culvert Mfrs. Assn., Middletown, Ohio

Proceedings, Fourth Annual Conference, American Municipal Association, 1928.—114 pages. Committee reports, papers and discussions on subjects including "The Promotion of State Municipal Leagues," "Standards of Correct Practice for Secretaries," "Editorial Policies," "Advertising," etc. $6. (Apply to John G. Stutz, Executive Secretary, Lawrence, Kans.)

The Installation of Business Methods in Our Municipal Government.—By William J. Casey, Vice-President, Commission on Efficiency and Economy, Baltimore. A paper delivered at the 21st Annual Convention of Building Owners and Managers, with discussions. "A genuine inspiration to other business men to put their own municipalities on a business basis. . . . A call for action." (Apply to William J. Casey, President, Continental Trust Co., Baltimore, Md.)

Platoon Schools.—A special over-size edition of the Portland, Ore., City Club *Bulletin*, dated September 14, is devoted to this subject. Since the platoon system is being gradually introduced into the Portland schools, the City Club appointed a special committee to make a survey and report to acquaint all members with the nature of the plan, to compare its results with those of the traditional educational system, and to suggest improvements in the operation of the platoon plan. The summarized report fills 23 pages. (Apply to Portland City Club *Bulletin*, Portland, Ore.)

The Rat: Arguments for Its Elimination and Methods for Its Destruction. Public Health Bulletin No. 180 (1928) shows the rat as a tremendous economic and health menace in the United States today. Action is necessary on the part of householders, heads of business buildings, community groups and municipalities in "relentless warfare," which should include trapping, poisoning, starving, etc., and which must be backed up by ratproofing and by proper anti-rat legislation. Discussion of rats and their habits; their destruction and suppression; and effective ratproofing make up this 10-page study. 5c. (Apply to Government Printing Office, Washington, D. C.)

1928 Supplement to Book of A. S. T. M. Standards.—This pamphlet of 195 pages is the first supplement to the 1927 edition of the Book of A. S. T. M. Standards gotten out every three years by the American Society for Testing Materials. The supplement contains 41 standards adopted or revised by letter ballot of the Society, September 1, 1928; 28 of these are new standards, and the remaining are replacements. The Book of Standards, Parts I and II, which were briefly reviewed in THE AMERICAN CITY for January, 1928, page 185, together with the present supplement, contains all of the 363 standards of the Society now in effect. The supplement contains the complete list of these and of the 185 tentative standards. The new or revised standards are separated as between metals and nonmetallic materials, as is also the basis of division of Parts I and II of the Book of Standards, so that the supplement can thus be separated correspondingly, if desired. Thirteen of the standards in the supplement relate to metals, the remaining 28 to non-metals. $1.50. (Apply to the Society, 1315 Spruce St., Philadelphia, Pa.)

The New Tammany.—By Joseph McGoldrick. A 14-page reprint from *The American Mercury*, September, 1928. In it a university professor discusses "a municipal government of imperial proportions reaching out in a myriad ways into the lives of its multitudinous citizenry." On the one side of the picture: "Vice conditions are better than they have ever been and superior to those of any other large city." On the reverse side: "There is scarcely a time when there is not some graft cloud in the political skies. As soon as one appears, the Tammany medicine men and rainmakers whoop up a dance called an investigation. Frequently four or five of these are called at once. If public interest persists in demanding a victim, some rascally clerk is dragged out and sent to prison and the public is expected to be satisfied. . . . It is one of those diabolically curious paradoxes of politics that critics chasten and therefore strengthen whenever they would destroy." (Apply to the author, Hamilton Hall, Columbia University, New York.)

Capital Expenditures.—A 30-page study issued by the Finance Department of the United States Chamber of Commerce, which has advocated certain principles that it believes should be recognized by state and local units of government in planning and financing improvements of a capital nature. The present study, based upon those principles and pointing out opportunities for their practical application, is intended for use by public officials and organizations of business men interested in promoting the sound administration of governmental finance. (Apply to the Chamber, Washington, D. C.)

The Campaign Against Venereal Disease.—Reports on world-wide activities in this field comprise the June, 1928, issue of *The World's Health*, Monthly Review of Red Cross Societies, which has been issued by them jointly with the International Union against the Venereal Diseases. 36 pages, with colored supplement showing reproductions of posters in various languages. 20 cents. (Apply to League of Red Cross Societies, 2 Avenue Velasquez, Paris, France.)

Other Reports Received

BOSTON, MASS.—Eleventh Year Book, Committee of the Permanent Charity Fund, Inc. 1928. 46 pp.

CAMBRIDGE, MASS.—Annual Report, Water Board, year ending March 31, 1928. 48 pp.

CANADA—Annual Report, National Parks Branch, Department of the Interior, Ottawa, year ending March 31, 1928. 25 pp.

CHICAGO, ILL.—Annual Report, Comptroller. 1927. 220 pp. 10c from Municipal Reference Librarian, City Hall, Chicago, Ill.

HARTFORD, CONN.—Annual Report, Department of Engineering, to March 31, 1928. 52 pp. and inserted tables.

NEW JERSEY.—Annual Report, North Jersey Transit Commission, Jersey City, 1928. 14 pp.

PHILADELPHIA, PA.—Seventh Annual Report, Philadelphia Art Jury, 1927. 46 pp.

PONTIAC, MICH.—Board of Commerce Report on Civic, Commercial and Industrial Features, 1928. 16 pp.

CONVENTIONS—WHEN AND WHERE

NOVEMBER 7-10.—SAN ANTONIO, TEXAS.
Texas Association of Sanitarians. Sixth Annual Short School. Secretary, E. G. Eggert, Texas State Board of Health, Austin, Texas.

NOVEMBER 12-14.—RICHMOND, VA.
American Municipal Association. Annual meeting. Executive Secretary, John G. Stutz, University of Kansas, Lawrence, Kans.

NOVEMBER 12-15.—CHICAGO, ILL.
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1222 National Press Building, Washington, D. C.

NOVEMBER 12-15.—CINCINNATI, OHIO.
International Association of Convention Bureaus. Annual meeting. Secretary-Treasurer, Fred Rein, 507 Commercial Building, St. Louis, Mo.

NOVEMBER 13-17.—BILOXI, MISS.
American Institute of Steel Construction, Inc. Annual convention. Executive Director, Charles F. Abbott, 285 Madison Avenue, New York.

NOVEMBER 16-17.—BRIARCLIFF MANOR, N. Y.
American City Planning Institute. Fall meeting. Secretary, Flavel Shoutleff, 130 East 22nd Street, New York.

NOVEMBER 19-21.—RALEIGH, N. C.
American Water Works Association, North Carolina Section. Secretary-Treasurer, H. G. Baity, Associate Professor, School of Engineering, University of North Carolina, Chapel Hill, N. C.

DECEMBER 3.—NEW ORLEANS, LA.
National Highway Traffic Association, South Central Division. Annual meeting. Secretary, Elmer Thompson, 12 East 53rd Street, New York.

DECEMBER 3, WEEK OF.—NEW ORLEANS, LA.
Seventh Annual Asphalt Paving Conference. (Address: J. E. Pennybacker, Secretary and General Manager, The Asphalt Association, 441 Lexington Avenue, New York.) To be held with *annual convention of Asphalt Paving Technologists.*—December 4-7. (Secretary-Treasurer, Chas. A. Mullin, 82 Saint Antoine St., Montreal, Que.)

DECEMBER 3-7.—NEW YORK.
American Society of Mechanical Engineers. Annual meeting. Secretary, Calvin W. Rice, 29 West 39th Street, New York.

DECEMBER 5-6.—WASHINGTON, D. C.
National Rivers and Harbors Congress. Annual convention. Secretary-Treasurer, S. A. Thompson, 824 Colorado Building, Washington, D. C.

DECEMBER 7-8.—PRINCETON, N. J.
New Jersey Public Health and Sanitary Association. Annual meeting. Secretary, Edw. Guion, M. D., Box 418, Atlantic City, N. J.

DECEMBER 10-12.—NEW YORK.
National Highway Traffic Association. Annual meeting. Secretary, Elmer Thompson, 12 E. 53rd Street, New York.

DECEMBER 13-14.—WASHINGTON, D. C.
Highway Research Board, National Research Council. Annual meeting. Director, Roy W. Crum, Washington, D. C.

DECEMBER 27-29.—CHICAGO, ILL.
American Political Science Association. Annual meeting. Secretary-Treasurer, Professor J. R. Hayden, University of Michigan, Ann Arbor, Mich.

JANUARY 14, WEEK OF.—CLEVELAND, OHIO.
American Road Builders' Association. Annual convention and Road Show. Secretary-Director, Charles M. Upham, National Press Building, Washington, D. C.

JANUARY 16-18.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 17.—NEW YORK.
City Planning Division, American Society of Civil Engineers. Meeting. Secretary, Charles B. Ball, 4227 North Ashland Avenue, Chicago, Ill.

JANUARY 28-FEBRUARY 1.—NEW YORK.
American Institute of Electrical Engineers. Annual winter convention. Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

FEBRUARY 12-14.—DETROIT, MICH.
American Concrete Institute. Annual convention. Secretary, Harvey Whipple, 2970 West Grand Boulevard, Detroit, Mich.

FEBRUARY 18, WEEK OF.—CHICAGO, ILL.
Associated General Contractors of America, Inc. Annual meeting. Secretary, Colonel D. H. Sawyer, 1150 Munsey Building, Washington, D. C.

FEBRUARY 26-MARCH 1.—WICHITA, KANS.
Southwest Road Show and School. Fourth session. Manager, F. G. Wieland, Exposition Building, Wichita, Kans.

MARCH 19-23.—SEVILLE, SPAIN
International Federation of Local Government Associations. Fourth International Congress. Director, E. Vinck, Rue de la Regence, Brussels, Belgium.

JUNE 24, WEEK OF.—TORONTO, ONT.
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 170 Broadway, New York.

Not just another cable – but a new KIND of cable

Trenchlay is different from all other underground cables. Older forms were built by adding one or more protective sheaths to existing cable structures.

Trenchlay was not so improvised. It was designed from the conductors out to meet the exacting requirements of parkway lighting and airport construction.

Trenchlay construction is anhydrous throughout—homogeneous and non-wicking. It is unaffected by earth acids or alkalis. It will not corrode, rust or crystallize. Electrolysis, and sheath loss and troubles from stray currents have been entirely eliminated.

Trenchlay is lighter, easier to install, and lower in first cost than metal armored cable.

With Trenchlay you will get more parkway lighting for every budget dollar—and a type of airport construction that cannot be equalled. Why not write for complete details now?

ROME WIRE COMPANY
DIVISION of GENERAL CABLE CORPORATION
Rome, N. Y.

BARE & TINNED WIRES · · · POWER CABLES · MAGNET, WEATHERPROOF & RUBBER COVERED WIRES · · FLEXIBLE WIRES, CABLES & CORDS · · SIGNAL & TELEPHONE WIRES · · · LEAD & STEEL-TAPED CABLES · SUPER SERVICE CORDS & CABLES · ROMEX · · · SPECIAL WIRES to SPECIFICATIONS

ROME WIRE

2836

FROM WIRE BAR TO FINISHED COPPER WIRE

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

The Rotary Plow in City Snow Removal

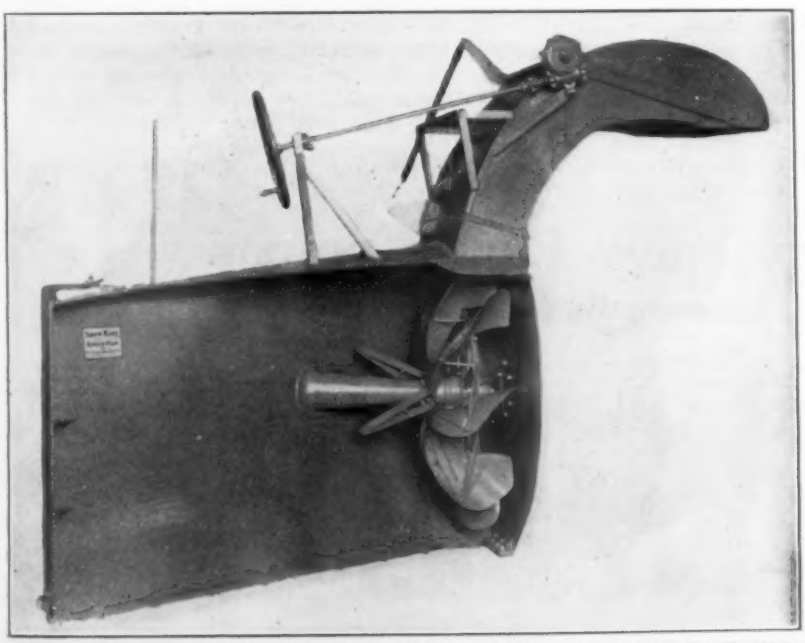
The rotary plow has long been an important factor in the removal of snow from suburban highways in cases where the snow has drifted to considerable depths and also where it has become hard-packed. The complete removal of the snow from the roadway has made this type of plow particularly effective, as it has thrown the snow a sufficient distance away from the road to prevent the formation of high banks immediately adjacent to the road.

The Rotary Snow Plow Co., Minneapolis, Minn., has recently developed a widening or loading type of Snow King rotary plow which can be used on city streets. It is claimed that this is the first rotary plow to be designed for the job of clearing as well as loading snow from city streets. The plow combines the lateral rotary principle of the Snow King plow with a conveyor hood for quick loading of the snow. It will open, clear and widen paths in snow on city streets, park boulevards, highways and airport runways and, if desired, at the same time load the snow on a vehicle for immediate removal.

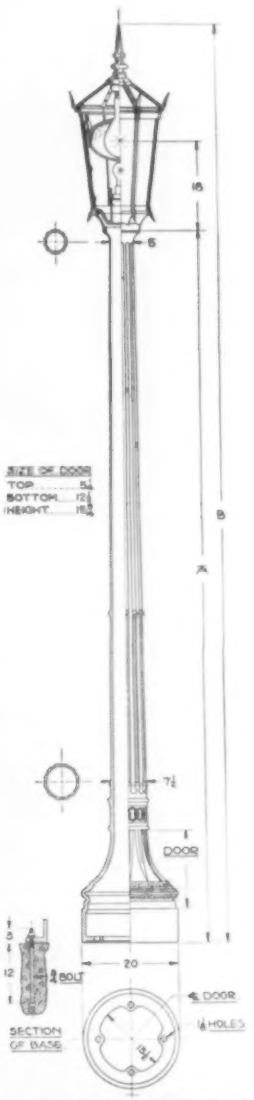
Two men are required for the Snow King widening and loading plow, one to operate the tractor or truck and the second to look after the plow. When loading, the direction of travel is with traffic, when widening, travel is against traffic. The hood shown in the illustration covers the chute when loading. The vehicle for hauling snow is driven alongside the plow, and is enclosed so as to avoid any possibility of accident or damage. Driving with traffic causes no delay in getting into position. The few seconds required to load a truck does not interfere with traffic even on narrow streets.

Snow can be loaded from a windrow or picked up as it lies. Also, the snow can be piled into windrows without loading and can be scattered where open spaces permit. When widening, the entire width of the street can be cleared where space exists between curb and sidewalk, as snow can be piled on this space. Where no space is available, practically the full width can be cleared, because a very narrow windrow is piled up. Present conditions, where a considerable width of street is blocked by wide sloping banks created by the use of pusher plows, can be entirely overcome.

The hood is instantly raised and lowered by a worm and sector enclosed in an oil-tight housing and operated with a shaft and hand wheel and further assisted by a heavy coil spring. This type of plow is the one-way type with a single rotor mounted at the left side looking from the rear. The chute, designed to confine and carry the snow stream, is mounted on top of the rotor. The chute is covered by a hood which directs the snow stream as desired. The moldboard is shaped to gather and deliver snow to the rotor with the least resistance. An alloy steel cutting edge for removing hard snow and cutting ruts extends along the bottom of the entire width of the moldboard.



THE NEW SNOW KING LATERAL TYPE ROTARY PLOW WITH LOADING HOOD, FOR USE ON CITY STREETS

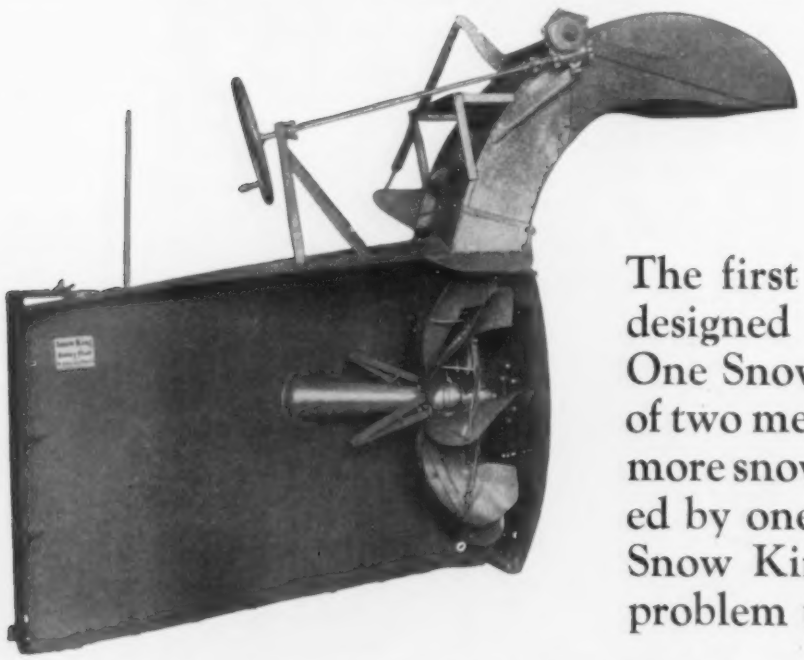


THE NEW DUOLUX COMBINED STREET LIGHT AND FLOODLIGHT

Combined Street Lights and Floodlighting Units

With the increased use of floodlighting for office buildings, business establishments and other edifices, there has come a new type of street lamp, known as the Duolux, a product of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

Keep Snow Off Your Streets with SNOW KINGS



The first Rotary Snow Plow designed for municipal use. One Snow King, with a crew of two men can clear and load more snow than can be shoveled by one hundred men. Let Snow King Solve your snow problem this winter.

MUNICIPAL officials and traffic engineers have shown remarkable interest in the new Snow King Loading and Widening Plow. It is the first completely satisfactory snow plow for clearing and loading snow from city streets, park boulevards, highways and airport runways.

This Snow King for municipal use is an offspring of the famous Snow King Highway Plow that is in general use on the highways of America. It combines the famous lateral rotary principle of the highway type with a flexible conveyor hood for quick loading of snow. The sharp-edged mould board of the Snow King breaks up every snow formation from slush to the frozen state. The powerful rotary whirls the snow up through the chute, throwing it directly on the truck or piling it in high narrow windrows, as desired.

Here is the ideal implement for your snow removal operations this winter. Snow King brings a remarkable saving in time and labor. It increases the efficiency of your truck removal from 200 to 400 per cent., because it packs far more snow into the truck body. Snow King will do a thorough job of snow removal for you, at a far lower cost than any other method.

Write us today for complete information, prices and specification.

The Rotary Snow Plow Company

Minneapolis, Minn.

Snow King ©

Widening and Loading Plow

The Duolux unit consists of an ornamental lantern with glass canopy equipped with two lamps, one in a canopy burning base up and one in the body of the lantern burning base down. This permits floodlighting and thoroughfare illumination from a single unit and standard.

A chromium-plated parabolic reflector mounted on adjustable supports is attached to the frame of the lantern and projects the light from the upper lamp toward the building which is to be illuminated, thus providing an ornamental housing for a concealed floodlight. The lower lamp serves the purpose of an ordinary street lamp.

Preventing Large Snow-Drifts

The only practical method of preventing the drifting of snow on roadway in open country is the use of snow-fence. The construction of bulky affairs made of wood is expensive, and the labor cost for moving them is great. The Good Roads Machinery Co., Kennett Square, Pa., has developed a snow-fence which is easily installed and which, when spring comes, can easily be taken down, rolled up and, with the posts, stored until fall. A snow-fence works day and night, keeping big drifts from forming directly on the roadway, thus making it possible for high-speed motor plows of the blade, shovel-nose or V-types to readily cope with the snow on the road.

The distance from the road that snow-fence should be erected varies, depending on the topography of the surrounding country. The use of snow-fence to prevent large drifts on the roadway is becoming general and increasing very rapidly.

Steel posts are furnished with Good Roads snow-fence. These posts have rivet lugs instead of punched lugs. The rivet lugs present a rounded surface to the fence wire and prevent cutting of the wire, which is an important feature. The posts are flanged U-bars of high-carbon steel. Fastening the fence to the post is made extremely simple by placing the wire back of the lugs, and one or two hammer blows fasten it securely.

The fence is a combination of wooden pickets, interwoven with double strands of heat-treated and extra heavily galvanized wire. The wooden pickets are 2 inches wide and ½-inch thick, and are spaced about 2¼ inches apart. One hundred feet of this fence rolls up into a bundle not over 3 feet in diameter.

THE PORTABLE SNOW-FENCE KEEPS THE DRIFTS OFF THE ROAD

A Wire Brush Attachment for Power Putting-Green Mowers

A wire brush attachment has been developed for greens mowers by the Jacobsen Manufacturing Co., Racine, Wis., for use in brushing creeping bent greens and for brushing compost into the grass.

The manufacturers state that the brush attachment prevents the bent from runing and brushes up the matted grass so that the mower can cut it. It is a well-known fact that a matted green lets the ball travel fast and free from one side of the green and makes it travel sluggishly when played from another direction. The wire brush brushes in the top dressing more thoroughly than it can be raked in and gets it down into the roots of the grass. It is possible to top dress the green in the morning and have a perfect playing green in the afternoon.

The use of the brush prevents the bent from going to seed and thus gives it a harder, stronger growth. The brush acts as a preventive of brown patch and other fungi by thoroughly aerating the turf and letting the sun and air into the soil. It is only necessary to brush a green occasionally to keep it from creeping. The brush has been made easily attachable to Jacobsen greens mowers.

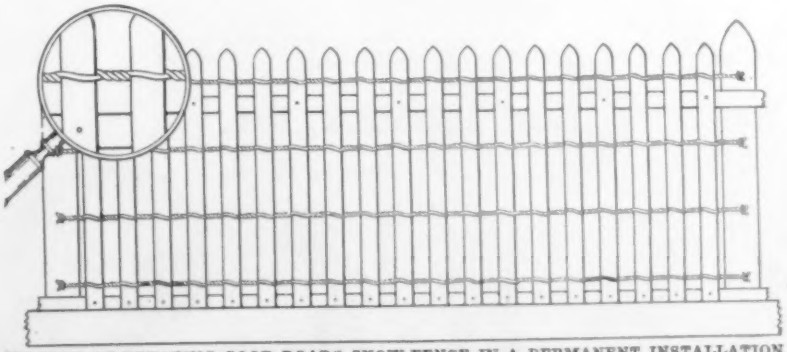
A JACOBSEN GREENS MOWER EQUIPPED WITH BRUSH FOR BENT GRASS

Brick Manufacturers Office Opened in Washington

The National Paving Brick Manufacturers Association has announced that its offices in the National Press Building at the southeast corner of 14th and F Streets, Washington, D. C., are now open. The National Press Building is the newest and best office building in Washington, and houses practically all the Washington correspondents of the larger newspapers of the country. The American Road Builders' Association, the American Association of State Highway Officials, and several other national organizations are also located in the building.

New Orleans Representative of Pump Company

The Chicago Pump Co., 2336 Wolfram Street, Chicago, Ill., has announced a change in its representation at New Orleans. H. J. Kelly, Louisiana Building, New Orleans, is now representing the Chicago Pump Co., instead of F. H. Chisholm.



METHOD OF ERECTING GOOD ROADS SNOW-FENCE IN A PERMANENT INSTALLATION SHOWING DETAIL OF PICKET AND WIRE STRANDS

58 in New York City Alone

In New York City alone there are

58 NELSON SNOW LOADERS

some owned by the City, some by the Boroughs, some by material dealers, some by contractors. And in the metropolitan district there are over one hundred.

High-pressure hit-and-run selling, extravagant claims, or noisy advertising could not accomplish these results.

They come solely from successful performance in the public eye, sustained throughout the four years that Nelson Snow Loaders have been in use,—a record not even approached by any other snow loader.

Such a record of proven performance means that there is no gamble in the Nelson,—you are assured beforehand of what you are getting.

Our new circular containing much valuable information is now ready. Write for it.

For High-Speed Snow Removal

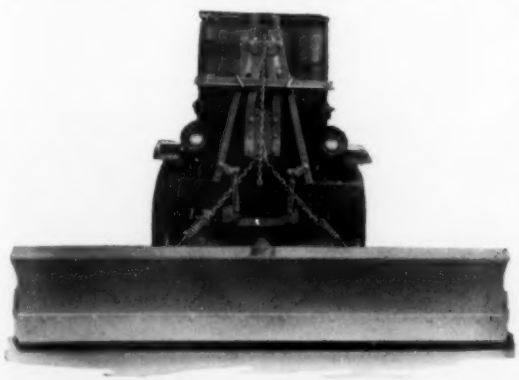
The N. P. NELSON IRON WORKS, Inc.
822 Bloomfield Avenue, Passaic, N. J.

does the work of a hundred men

A Pneumatic Lifting Device for Blade Snow-Plows

A pneumatic lift for snow-plows attached to trucks and busses has been developed by the Engineering Department of the Good Roads Machinery Co., Kennett Square, Pa., in collaboration with the White Motor Truck Co., Cleveland, Ohio, and the Westinghouse Air Brake Co., Wilmerding, Pa. It is believed that this is the first application of compressed air for the function of raising and lowering a snow-plow suspended from the front of a vehicle. Prior to this development a second operator was necessary in the driver's seat for the sole purpose of operating the manual lift device of a snow-plow. This entailed considerable added expense for comparatively intermittent and unskilled service, but, absolutely necessary as it was, this could not be added to the duties of the driver.

The simplicity and economy of the Good Roads-Westinghouse pneumatic lift insures its quick adoption by highway departments and municipalities. The driver can subconsciously operate the snow-plow by means of an air valve and a latch rope without distracting his attention or adding to his physical efforts. The lift is operated by a vertical Westinghouse air cylinder attached to an A-frame clamped to the chassis in front of the radiator. It



THE NEW GOOD ROADS PNEUMATICALLY OPERATED BLADE SNOW-PLOW

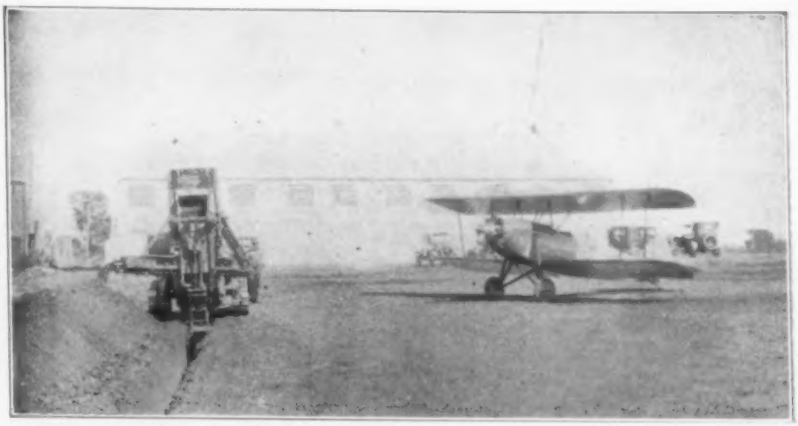
is easily substituted for the prevalent hand-operated hoist on existing plows. The chain lift is automatically locked when the air is shut off, but can be quickly released by pulling the trip rope.

Trucks equipped with air brakes require no further attachments than the air cylinder and lock. Those not equipped with air brakes can with a moderate expenditure attach a compact Westinghouse air-compressor to the timing gear box on the motor, and the necessary air tank to the chassis.

The operator's control valve is attached to the steering gear post just below the wheel.

New Chicago Representative

The Paradon Manufacturing Co., Arlington, N. J., has announced the appointment of A. F. Barron, 30 North Michigan Avenue, Chicago, Ill., as its representative in charge of sales and service of Paradon chlorinators in Illinois, Indiana and southern Wisconsin.



A BARBER-GREENE DITCHER PREPARING THE TRENCHES FOR WATER PILES AND TILE DRAINAGE AT THE NEW AIRPORT IN AURORA, ILL.
The airport was officially inaugurated in September, when its outline lights and beacons were turned on

Concrete Meter Boxes with Concrete Covers

A concrete water-meter box which has been used for 18 years on the Pacific Coast, and which has been adopted as standard equipment in over 700 cities is one of the products of the Art Concrete Works, Inc., Pasadena and Oakland, Calif., Birmingham, Ala., Jacksonville, Fla., and Houston, Texas.

The boxes are made by the use of heavy cast iron molding machines, from which the boxes are pushed out as from a die. This makes it possible to manufacture a finished product with all parts strictly uniform and interchangeable. The combined advantages of ample strength, good appearance and low cost, make the box of interest to all practical water-works men.

The boxes are so designed that it is easy to remove the meter through the top opening without taking up the box. The inside dimensions of the No. 36 box illustrated are 9½ x 16 inches and 12 inches deep over-all. These dimensions provide suitable space for ⅝-inch or ¾-inch meters, together with a shut-off. The illustration shows a box with a concrete cover and round concrete reading lid. These boxes may also be supplied with one-piece covers if desired. For use under heavy traffic, strongly ribbed cast iron covers with locking reading lids can be supplied, interchangeable with the concrete covers. The concrete covers and lids, however, are practically self-locking, as it is difficult to remove them without the suitable hook or key because of their straight sides and deep seats. This design is practically fool-proof and has none of the disadvantages of a mechanical lock.

A CONCRETE METER BOX FOR SOUTHERN STATES

Snow Loaders for Snow Removal

Plows of various designs and high-powered brooms are used for plowing and piling the snow along the curbs on city streets, or in some cases making windrows in the middle of the street. Hand loading into trucks and wagons is rapidly giving way to the use of the far more efficient and economical machine loaders. In the machine built by the N. P. Nelson Iron Works, 822 Bloomfield Avenue, Passaic, N. J., the excavating machinery is carried on a slow-speed tractor and consists of a powerful excavating spiral or feeder and a scraper flight conveyor for elevating the snow to the trucks. The feeder and conveyor are driven as a unit from the engine of the tractor, controlled only by a single friction clutch, while the regular clutch in the tractor transmission controls the traction wheels. The operation of the elevator is thus made entirely independent of the travel of the loader, and the machine may be moved forward or back at any selected speed, with the elevator stationary or running, as desired.

The feeding spirals at the foot of the conveyor are made of hardened steel plates with saw-like teeth around their outside edge. Turned by the conveyor chains, these spirals act like saws, ripping into the snow banks, loosening and breaking up the half-frozen mass, and gnawing away the ice that forms next to the pavement. As fast as the snow is broken out, the spirals pass it in to the conveyor, while a clean-up scraper following the feeder prevents spill and keeps the feeder from cutting the pavement. As the active cut-

Breaking Winter's Grip

DEEP snow-drifts of winter fade away before the powerful attack of the Trackson McCormick-Deering. Light snow falls are cleared with a speed that insures continuous transportation.

Rugged enough to buck through the heavy banks—dependable under the most severe weather and ground conditions — amazingly economical in operation — this Master Crawler-Tractor pays direct returns to the community by protecting trade and traffic.

With the frost gone, the Trackson is ready for road building, maintenance and construction work. Highway officials find it indispensable for superlative service the year 'round.

Let us help you solve this winter problem. Write for further particulars NOW.

Trackson Company
FULL-CRAWLERS & TRACTOR EQUIPMENT
518 CLINTON ST. MILWAUKEE, WIS.

THE NEW NELSON TYPE R-5 SPECIAL SNOW LOADER

ting edge across the full width of the feeder removes the ground ice, the rigid edge of the scraper moves always into the space cleared by the feeder, so that the stone-hard, glassy ice next the pavement cannot stop the advance of the loader.

The latest model of this machine is called the Type R-5 Special and takes its power from a 35-horsepower Hercules engine. The front of the engine drives the conveyor and feeder, and the rear is connected through the clutch and transmission to the worm gear differential. Heavy chain and sprocket drives extend from the differential axles to the lock shafts and traction wheels.

The lock shafts are an essential part of the Nelson transmission. They carry a manually controlled clutch which, when engaged, compels both traction wheels to move at the same speed. Should slippery pavements permit one wheel to spin, thereby destroying the tractive power, the push of a handle locks both transmission wheels together and compels both to work. All wheels are on Timken roller bearings.

The loader has eight speeds, three forward and one reverse, in the high-speed group, and three reverse or digging speeds and one forward or pull-out speed in the low-speed group. The total speed range is from 8 miles an hour in high, down to 30 feet a minute for digging. Three independent sets of brakes are provided. An electrical equipment comprises generator, battery, starter, horn, headlights, taillight, and a working light at the rear.

A Portable Flasher

An electric portable flasher designed primarily for warning traffic where kerosene lanterns have been extensively used, is being put on the market by the National Carbon Co., Inc., 30 East 42nd Street, New York. This new Eveready portable flasher has many other possible uses. Although the initial cost of the beacon is considerably more than that of an oil lantern, its maintenance cost is said to be so much less that in the long run it provides a very economical warning signal.

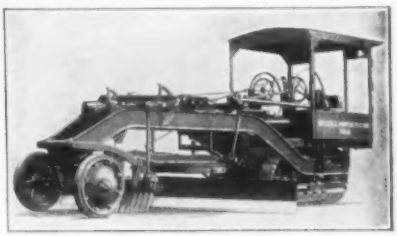
The National Carbon Co. calls attention to the fact that oil lanterns are not dependable, thus more than the actual number needed as warning signals are usually used. They require a great deal of attention for trimming and filling, which, at the present day labor wage scale, makes their maintenance expensive. It is estimated that this cost is approximately $50 per year per lantern where quantities of lanterns are used almost every night and where each lantern must have daily attention for filling and cleaning.

The Eveready portable flasher is served by Eveready Columbia dry cells, one set of which lasts approximately two months on the basis of continuous burning at a cost of about $10 per year. Such long and economical service is possible because the flasher subjects the dry cells to a light and intermittent drain under which the battery's capacity is best utilized.

In addition to this advantage in maintenance cost, the portable flasher has the distinct advantage of its flashing feature, which cannot be obtained with oil lanterns and which traffic and railway authorities agree is a much better warning signal than a steady burning light.

THE NEW EVEREADY ELECTRIC FLASHER

The Eveready flasher is 16 inches high and 7 inches in diameter at the base, and weighs 16½ pounds, including the batteries. It requires four standard Eveready Columbia 6-inch dry cells connected in series to deliver six volts. An extra 6-volt Mazda lamp is carried inside the battery housing. The battery compartment is constructed of seamless steel finished in red. The top of the flasher is cadmium plated for weather protection and the flasher is equipped with a heavy fresnel type red glass lens. There is a padlock for the battery compartment, with an extra-long hasp so that the device can be chained. The flasher is of rugged construction throughout and is entirely waterproof.



THE NEW RUSSELL PATROL GRADER

A New Motor Patrol Grader

A motor patrol grader built expressly for the Caterpillar Twenty tractor, has been announced by the Russell Grader Manufacturing Company, Minneapolis, Minn., and is called the Russell motor patrol No. 6. The 58-inch diameter circle on this machine is reinforced with an extra angle-iron, which gives a better support to the blade. The circle is provided with a clamp support consisting of a screw clamp contact to the circle. There is a plate on the end of the screw which comes in contact with the circle, preventing the circle from becoming defaced.

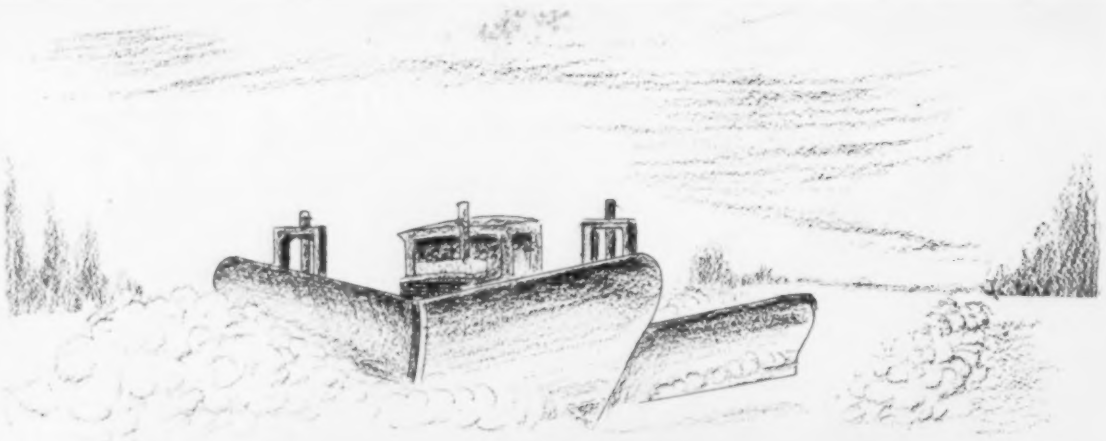
The blade side shift is a rack and pinion type operated by a worm and gear, enclosed in a metal housing. The blade lift is of the worm and gear type enclosed in dust-proof cases. The gear may be shifted to five different positions for wear.

Ball-and-socket connections are used in the lifting links, and the compensating spring blade lift consists of a tension spring applied over an equalizer cam so that the spring tension is uniform at any elevation of the blade. The drawbars are hooked up to a universal connection which allows free motion without play. A snow-plow attachment may be furnished, making this grader an all-season unit.

The weight of the grader complete with tractor and scarifier is 15,850 lbs. It has a 210-inch wheelbase, a 52-inch tread in front, and a 42-inch tread in the rear.

Spray Pump Manufacturers Merge

The Bean Spray Pump Co., San Jose, Calif., and Lansing, Mich., and the Anderson Barngrover Co., San Jose, Calif., have merged under the name of the John Bean Manufacturing Co. The consolidation includes not only the San Jose and Lansing plants, but all subsidiaries of the two companies. The merger joins two companies manufacturing machinery and equipment for the spraying of shade and fruit trees.



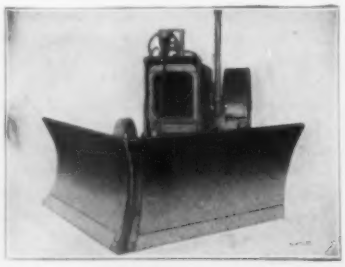
BAKER SNOW PLOWS
FOR MOTOR TRUCKS AND TRACTORS

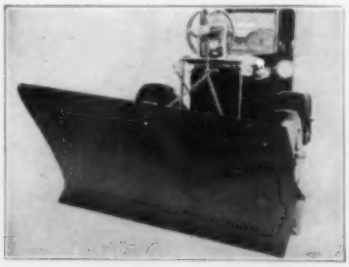
Hitch to Dependable Snow Plows

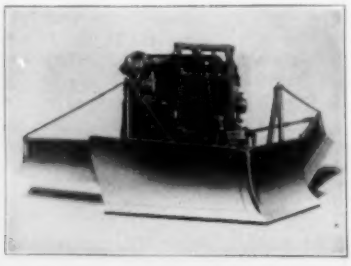
First choice of leading Cities and Highway Departments in the Snow Belt

Your motor trucks and tractors are ideal for snow-moving—but are useful only when hitched to dependable snow plows. Get the most out of your motive power by attaching Baker Snow Plows—time-tested with a record for good service since the first snow plows were built. No highly experimental features are embodied in their construction. Just good strong snow plows built to a snug fit on any standard motor truck or leading industrial tractor. Yet up-to-the-minute with every feature of proven merit.

You are offered your choice from over twenty models of Baker Plows in "V" types with or without wings, blade types with Baker safety tripping blades, rigid blade plows, speed plows, all for your trucks or tractors.







Some of the 20 models of Baker Snow Plows

***The* BAKER MFG. CO. 503 Stanford Ave. Springfield, Ill., U. S, A,**

Please send literature on Snow Plows for ....
(Give name and model of truck or tractor)

....., ..., ..., ...
Name *Address* *City* *State*

503

Mail The Coupon

HI-VO-LITE FIXTURES USED WITH 30-INCH BRACKETS FOR HIGHWAY LIGHTING

A High-Voltage Street Light

A high-tension street fixture which will stand 60,000 volts, thus making it possible to eliminate the high-voltage insulator which must be placed between a dry process head and the supporting member, is being made by the Line Material Co., South Milwaukee, Wis. This new Hi-volite can be used in many street-lighting systems, and particularly for highway lighting, where there is less danger in the use of high voltage on a lighting system.

The body is designed symmetrically so that it can be turned out of wet process porcelain just like high-voltage insulators for sub-station work. The lead-in wires are dead-ended onto the two brass ears and then fed directly through holes in the porcelain to the socket. The head can be equipped with a multiple socket for a light up to 500 watts, or with series sockets for lamps up to 1,000 candlepower.

The fixture is universal in that it will take a radial wave or a radial bowl reflector. The small thumbscrews on the sides attach the reflector to the body. A Holophane refractor may also be used with this head by merely adding a refractor holder. The fixture can be inner- or outer-wired.

The unit is usually equipped with an acorn-shaped diamond-mesh globe with just a faint touch of opalescence. The diamond mesh makes the glassware washable in all directions and gives a scintillating effect both in daylight and when the lamp is lit at night.

Dallas Manager for Hersey

The Hersey Manufacturing Co., E and Second Streets, South Boston, Mass., has announced the appointment of W. E. Pebworth as Manager of the Dallas branch, at 2301 Griffin Street, Dallas, Texas. Mr. Pebworth has been associated with the Hersey Manufacturing Co. in the sale of water meters in the southern territory and is now taking charge of the Dallas office in place of the late Manager, B. F. Erwin.

Road Machinery in Airport Construction and Maintenance

There are few cities of any size in the country that do not have an airfield of some kind and nearly every one of them is planning a more permanent airport. There is no doubt that road machinery has an important place both in the construction and in the maintenance of these airports. In the first place, an airport means the building of good roads, often several miles of them to the field, and also roads into and around the field. This means the use of road rollers and road graders.

The field itself must be graded level and rolled firm for both landing and take-off, and for this work large graders and heavy rollers are desirable. After the field has been fully established, it must be kept in good condition by a small roller.

The small roller made by the Galion Iron Works & Manufacturing Co., Galion, Ohio, is used both in rolling sod and in keeping it level and firm, as well as in rolling the gravel or macadam roads. The planer and scarifier attachments are often useful, and the roller is also a practical utility tractor. These small rollers are now in use at several flying fields, among them the Ford field at Detroit.

The accompanying illustrations show Galion road machinery at work on the Lunken airport at Cincinnati, Ohio, where the Los Angeles-Cincinnati air race ended with Art Goebel of Los Angeles winning in his Lockheed-Vega monoplane with a non-stop flight of 15 hours and 14 minutes. The Galion master roller shown in this illustration is at work on the macadam road which leads into and around the field, while the leaning-wheel grader is at work leveling ground for the take-off field, and some of the mail planes are shown in the distance. Both machines are the property of the Department of Highways of the city of Cincinnati.

Snow-Plows for Use with Motor Trucks

Experience has shown that snow-plows attached to the front of motor trucks are perhaps the best for average working conditions in cities and suburban communities. It is almost always possible to fight the snow as fast as it falls and by using comparatively high-speed equipment like motor trucks and covering a large mileage of pavement as fast as may be necessary, the snow is kept off the pavement and the streets and roads are kept open at all times.

Western snow-plows, a product of the Austin-Western Road Machinery Co., 400 North Michigan Avenue, Chicago, Ill., are made in both straight-blade and V-shaped types, both of which can be mounted on any 2-ton or larger motor trucks. The two types of Western plows are convertible; that is, both types of blade fit on the same general framework which is mounted on the front of the truck. The substitution of one blade for the other is but the work of a few minutes, and the operator who does not have the constant need for both types of blades, but who is likely to need first one and then the other at some time during the winter, is thereby relieved of the expense of purchasing complete plows of both types.

While conditions naturally vary to a great extent in different localities, it is generally true that the straight-blade type of snow-plow will work more satisfactorily and economically under average operating conditions. There are times, however, when the situation is reversed and

A GALION GRADER AND ROAD ROLLER WORKING AT THE LUNKEN AIRPORT, CINCINNATI, OHIO

Gettelman Hi-Speed Snow Plows

Will Keep Your Roads Open

The Plow Blade is offset so as to clear the way for the truck wheels

Highway commissioners, municipal officials and contractors will find the Gettelman Hi-Speed Snow Plow ideal equipment for solving the highway and street snow-removal problem this winter. It is the lightest, fastest and strongest trip-blade plow on the market.

The City of Milwaukee and Milwaukee County have standardized on Gettelman Hi-Speed Snow Plow equipment, having found through actual experience that the Gettelman plow shows maximum accomplishment with minimum power, is light in weight, has keen cutting ability and is sturdily built to withstand unusual service.

The Gettelman Hi-Speed Snow Plow will operate in dry snow at a speed up to 35 miles per hour. The plow may be easily and quickly installed on any truck of two tons capacity or larger. The scraper blade is 38 inches high and is made in nine- and ten-foot lengths.

Mail the coupon below, today, for complete information.

THE HEIL CO.

1242-60 26th Avenue Milwaukee, Wisconsin

The Heil Co.,
1242-60 26th Avenue, Milwaukee, Wis.

Please send me your Bulletin 183 which contains complete information about the Gettelman Hi-Speed Snow Plow.

Name .....

Firm Name .....

Address .....

The Gettelman Snow Plow scrapes clean. Here it is in operation on a rough brick pavement

Yes—we should like you to mention THE AMERICAN CITY.

A WESTERN BLADE SNOW-PLOW MOUNTED ON A FEDERAL TRUCK

the work can best be handled by the V-shaped type.

The Western straight-blade snow-plow has a 10-foot moldboard made of 5/16-inch steel, flanged at the top and bottom to strengthen it laterally, and provided with a removable 6-inch cutting edge or bit which gives the blade a total height of 21 inches. The blade is reinforced vertically by six 2½ x 2½ x ½-inch open hearth steel angles, and longitudinally by a 3 x 3 x ½-inch angle to which is fastened the blade circle. When set at the normal plowing angle of about 30 degrees, this 10-foot blade cuts a path about 8 feet wide and throws all the snow to the same side. The blade is shaped to roll rather than push the snow, and all the rivets on the face of the blade have countersunk heads to provide a smooth surface, which does not interfere with the movement of the snow, as would projecting rivet heads.

The V-shaped blade cuts a path 8 feet 4 inches wide and throws the snow from the center to both sides of the road. The blade is 34 inches high, including the removable cutting edge or bit, which takes all the wear and is made in two pieces, one for each side of the V. A replaceable steel nose casting fits over the blade and bit and stands the greater part of the abuse to which the V-shaped type of plow is quite likely to be subjected. The blade itself is made of ¼-inch stock, which is said to be much heavier than that commonly used in plows of this type. The plow is substantially constructed and able to buck heavy drifts successfully, not only because of its weight and strength, but also because it is attached to the frame of the truck near the rear axle instead of to the front axle.

New York Buys 37 More Trucks for D. S. C.

The city of New York has placed orders for 37 more 7½-ton American-LaFrance commercial trucks made by the American-LaFrance & Foamite Corporation, Commercial Truck Division, Bloomfield, N. J., and to be used by the Department of Street Cleaning of the borough of Manhattan. Twenty-three of these are to be used as flushers and the remainder as dump-trucks.

A few weeks ago New York City placed an order for 219 American-LaFrance trucks. One hundred and eighty-eight 7½-ton trucks of the previous order were for the borough of Manhattan, sixteen 2½-ton trucks for the borough of Queens, and fifteen 7½-ton trucks for the boroughs of Queens and Richmond.

The new order just placed brings the total for the city up to 256 and the price to over one million dollars. This is believed to be the largest single municipal investment in motor trucks ever made in one year.

Redflex Buys Automatic Signal and Sign Co.

The Redflex Signal Co., Cleveland, Ohio, has announced that it has purchased the business of the Automatic Signal & Sign Co., Canton, Ohio. The officers of the Redflex Signal Co. are Alton H. Greeley, who is President of the General Storage Co. and the Greeley Terminal Co., and Chairman of the American Chain of Warehouses, Inc.; Edward A. Weiland, who is President of the Philip Kirschner Co. and E. A. Weiland Co.; and Eben S. Martin, who is Manager of the Redflex Signal Co.

New Fire-Alarm and Police-Signal System of Steubenville, Ohio

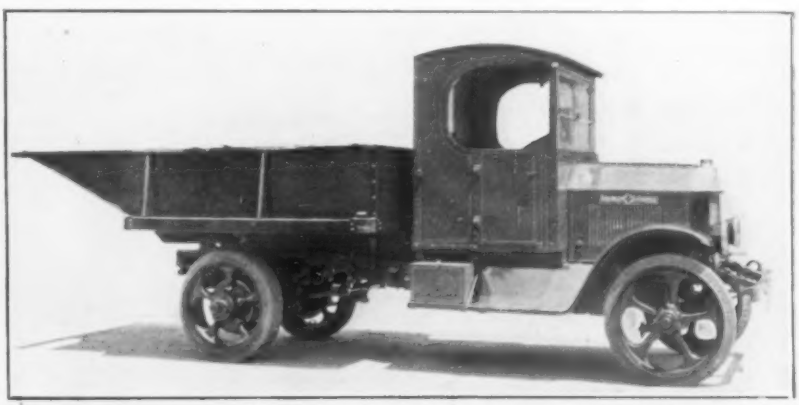
The city of Steubenville, Ohio, has recently awarded a contract to the Harrington-Seaberg Corporation, Moline, Ill., for a complete fire-alarm and police-signal system. The system will consist of one 12-circuit battery charging and line controlling switchboard having ten circuits and two alarm circuits, 116 fire-alarm boxes, one 6-circuit police-signal switchboard having 6 recall circuits, 42 police signal boxes, and 42 recall flashlight stations.

Manufacturers Consolidate

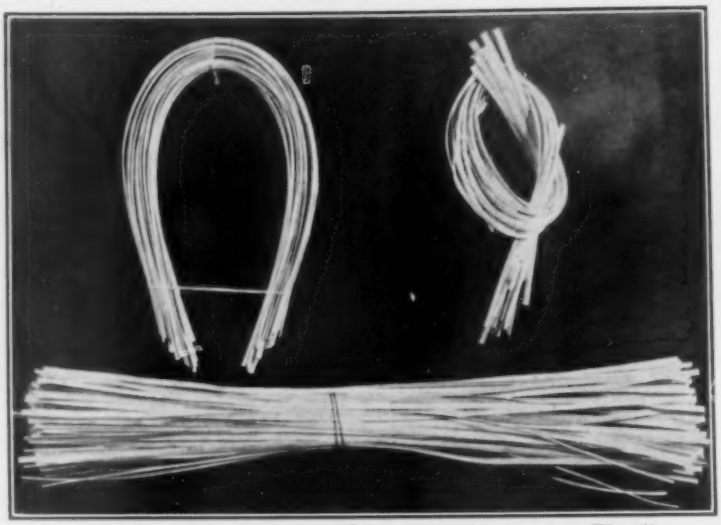
The Nordberg Manufacturing Co., Milwaukee, Wis., and Symons Bros. Co., the first a manufacturer of diesel engines and rock crushers, and the latter a manufacturer of crushers, have consolidated. Among Nordberg's other products are the Nordberg-Butler shovel and air-operated machines for loading, underground in drifts and tunnels, the Nordberg track shifter used for shifting track in many mines and quarries, and the Symons cone crusher, which has been produced at the Nordberg plant. The Symons organization manufactures the Symons horizontal disc crusher and the vertical disc crusher. The consolidation admits of a more advantageous use of the manufacturing facilities of Nordberg at Milwaukee. The crusher department will be transferred to the main office of the Nordberg Manufacturing Co. at Milwaukee, and branch offices will be continued in New York and Los Angeles.

New Sales Representative

The Paradon Manufacturing Co., Arlington, N. J., has announced the appointment of F. W. DuBois of the American Pump & Supply Co., General Motors Building, Detroit, Mich., as sales representative. Mr. DuBois will have charge of the sales and service of Paradon chlorinators in the state of Michigan.



TYPE OF TRUCK PURCHASED FOR THE DEPARTMENT OF STREET CLEANING, NEW YORK CITY



LIVE
SPRINGY
FLEXIBLE

FAULTLESS FIBER
HUNTSVILLE
HICKORY
FOR STREET SWEEPERS

HUNTSVILLE FIBER
& VENEER WORKS

Costs are what count. The live, springy, flexible broom fiber that handles with ease the heaviest refuse —that makes a clean sweep of even the roughest of pavements—that gives consistent service over a long period of time—that, in some parts of the country, where rainfall is particularly heavy, has proved to be the only fiber that will stand up at all—that is the fiber that gives you the best service for your money—**the cleanest job of all at the lowest cost per sweeping-mile.**

Get live, springy, flexible HUNTSVILLE HICKORY for your motor pick-up sweepers, and save frequent expensive refills.

Look for this trademark on every bale

The story of "Huntsville Hickory" a new booklet of interest to everyone who believes in clean streets.

Write for your copy

FRANK H. FORD, Pres.

HUNTSVILLE, ALABAMA

AND NOW
Even Greater Power

NEW RUSSELL MOTOR PATROL No. 6

"Caterpillar" 20 Tractor used for Power

The new Russell Motor Patrol is certainly a marked advancement. This latest model has the same high quality construction and is very sturdily built to withstand the increased power of the "Caterpillar" 20 Tractor. Handles the bigger, tougher jobs and does it most effectively.

No. 6 is far ahead of all other motor patrols. With its greater power it steps into the lead with our four "unified" models Nos. 2-3-4-5 which are everywhere demonstrating their unusual fitness, capacity and superiority.

Complete Russell Line for Road Construction, and Road Maintenance includes—
5 Sizes Motorized (Unified) Road Machines
10 Sizes Road Machines (for Horse or Tractor Power)
3 Sizes Elevating Graders
Scarifiers, Road Drags and Wheel Scrapers, Drag Lines, Conveyors, Gravel Screening, Crushing and Loading Equipment, etc.

Catalog sent free and postpaid.

Russell Grader Manufacturing Co.

Factory and General Offices
Minneapolis, Minnesota

GALION MASTER

FOUR CYLINDER MOTOR ROLLER

Truly the Master of all Road Rollers and the last word in Roller construction.

Galion Masters are the cheapest in the long run considering the many years of uninterrupted service they will give you.

The illustration shows a Galion Master rolling Amiesite where extra compression is necessary.

Note close to the curb rolling made possible by easy positive control.

Write for illustrated catalog

THE GALION IRON WORKS & MFG. CO., GALION, OHIO